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ABSTRACT

This research bulletin includes reports of research in progress or recently completed from March through August 1972. Each entry includes information concerning the investigator, purposes, subjects, methods, duration, cooperating groups, and findings (if available). The reports are listed under several topical headings: (1) Long-Term Research, (2) Growth and Development, (3) Special Groups of Children, (4) The Child in the Family, (5) Socioeconomic and Cultural Factors, (6) Educational Factors and Services, (7) Social Services, and (8) Health Services. In addition to the reports, an extensive review paper entitled, "Obese Children and Adolescents: A Review" is included. The paper discusses the calibration of obesity and the physical and psychosocial causes, consequences, and cures of obesity in children and adolescents. (SDH)

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RESEARCH RELATING TO CHILDREN

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Bulletin 30

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NOTES: *Research Relating to Children* is prepared by the ERIC Clearinghouse on Early Childhood Education under the direction of Lilian G. Katz, Ph.D. Investigators who wish to submit abstracts of their research projects should address correspondence to:

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PREFACE

Research Relating to Children, Bulletin 30 includes reports of research in progress or recently completed research. With the exception of Long-term Research, it does not repeat studies included in *Bulletins 3* through *29*, even though they are still in progress. This issue, therefore, does not reflect all research relating to children, but only research reported to us from March 1972 through August 1972.

In addition to reports of research in progress, *Bulletin 30* contains an extensive review paper. This review, entitled *Obese Children and Adolescents: A Review*, was prepared by Vaughn E. Stimbert, Ph.D., Psychologist and Kitty R. Coffey, M.S., Nutritionist at the University of Tennessee Child Development Center. The paper discusses the calibration of obesity and the physical and psychosocial aspects of the causes, consequences, and cures of obesity in children and adolescents. We are grateful to Dr. Stimbert and Ms. Coffey for making their work available for inclusion in *Research Relating to Children*.

Publication references and plans are cited in the abstracts of research in the bulletin. ERIC Clearinghouse, however, does not maintain information on the publications of these investigators. If you wish to obtain further details about any of the projects, please check professional journals in the appropriate field, or write directly to the investigator.

We wish to thank investigators who have submitted reports of their research, and those who have informed us of other studies. We wish to acknowledge the valuable assistance of the Science Information Exchange and the foundations that provide us with information about their research grants.

Lilian G. Katz, Ph.D.
Director
ERIC Clearinghouse on Early Childhood Education

To Research Investigators:

This publication is only as complete as you are willing to make it. On page 150 you will find a form for reporting your current research. On page 153 you will find a form to let us know of other investigators who are working in the field. Please let us hear from you.

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Research Relating to Emotionally Disturbed Children, 1968. A listing of studies reported to the Clearinghouse between 1956 and 1967, including publication references. Single copies free from the Children's Bureau; also available *directly* from the Government Printing Office, Washington, D.C. 20402, for $1.00. Do *not* send money to the Children's Bureau.

Research Relating to Mentally Retarded Children, 1966 (reprinted 1968). A listing of studies reported to the Clearinghouse between 1948 and 1965, including publication references. Single copies free from the Children's Bureau; also available *directly* from the Government Printing Office for 65 cents. Do *not* send money to the Children's Bureau.

*Research Relating to Children.** An inventory of abstracts of ongoing or recently completed studies, published about every six months. Single copies of the following issues are available without charge from the ERIC Clearinghouse on Early Childhood Education, 805 West Pennsylvania Avenue, Urbana, Illinois 61801. (Dates indicate period during which the studies were reported to us.)

Bulletin 17 (February 1963—February 1964)
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Bulletin 20 (October 1965—May 1966)
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*An investigator receives a free copy of the issue of *Research Relating to Children* in which his study appears. A free copy of each issue is available to libraries and research centers.

OBESE CHILDREN AND ADOLESCENTS: A REVIEW

Vaughn E. Stimbert and Kitty R. Coffey

University of Tennessee Child Development Center

Obesity is a significant health problem and social disability. In spite of its popularity as an area of public concern and activity, this interest has not been reflected in the scientific community particularly in the behavioral sciences. The research conducted on obesity has primarily involved the physical aspects of the disorder and has been done almost exclusively with adults. On the other hand, research relating to children and adolescents is particularly important because overweight children invariably grow into overweight adults with consequent health and social problems. Because obesity which occurs in childhood may differ in important aspects from obesity acquired later in life, extrapolation from adult studies is a questionable practice. Facts about this disorder are trailing far behind fads and fallacies even though obesity has been described as a health problem of epidemic proportion (Collipp, Schmierer, Greensher, Rezvani, & Halle, 1971).

This review will cover the major areas and issues in research on obesity in children and adolescents. Existing research has already identified a disorder of considerable complexity and importance. Because of the infrequent use of children in research, many studies have been included that do not involve this population but have strong implications for understanding the disorder in children. As obesity becomes a more popular research area, future reviews may be based more exclusively on studies with children. That time apparently has not arrived.

As in other areas of child development, such as retardation, learning disorders, emotional disturbances, etc., obesity involves a wide range of variables, both biological and environmental, which interact in subtle and complex ways. Typical of the early stages of many research areas, the data on obesity is predominantly correlational and often obtained in poorly controlled situations. The assignment, therefore, of cause and effect to particular variables has often been premature and misleading. For organizational purposes, however, studies have been grouped according to calibration (measurement), causes (etiology), consequences (implications) and cures (treatment). In some instances the assignment of a study to cause or effect has been arbitrary and, therefore, these divisions should not be taken too seriously. It is hoped that this organization will aid in the identification of important aspects of obesity research without leading to an oversimplified view of the issues.

Obesity has been defined as the accumulation of an abnormal or excessive amount of fat (Heald, 1971; Waxler & Leef, 1969; Wohl, 1964). It should be recognized, however, that some fat is essential for human survival—functioning in the roles of "flotation, flirtation, starvation, and insulation" (Mann, 1971). Goldbloom (1968) refers to obesity as "a disturbance of body composition rather than of body weight." With reference to children, Mayer (1970) suggested the practical definition that "A child is obese if he or she is too fat for his or her own good."

Although it is recognized that obesity is a prevalent and hazardous condition, there is some doubt as to which people are, in fact, obese. It has been said that a man whose total fat content exceeds 25 to 30 percent of his total body weight may be diagnosed as obese, whereas a woman whose total fat content exceeds 30 to 35 percent may be so diagnosed (Mayer, 1959).

With regard to children there are also varying criteria of obesity. Knittle (1971) has considered children obese at 130 percent or more of ideal body weight. Mobbs (1970) feels 120 percent or more of ideal weight should be the criterion of obesity. Other cut-offs have been the 90th percentile (Hooper & Alexander, 1971; Ruffer, 1970), the 84th percentile (Seltzer & Mayer, 1965) and the 95th or 99th percentiles (Keys & Brozek, 1953).

Overweight and obesity are not necessarily interchangeable terms (Lesser, Deutsch, & Markofsky, 1971). Overweight implies that a subject's weight has been compared to the norm of the population for his age, sex, and height; and he weighs more than expected (Ward, 1968). By this criterion a football player might be considered obese when, in fact, he is merely overweight in comparison to the *norm*. Waxler and Leef (1969) have considered weights 10 percent above the norm as overweight. Thus, an overweight person may not be obese, whereas an obese person invariably will be overweight.

It is difficult to estimate the frequency of obesity. Various statistical sources indicate that at present approximately 30 percent of the adult population of the United States may be classified as obese. In contrast, at the turn of the century possibly no more than 15 percent of the adult population were so classified (Waxler & Leef, 1969). The current incidence of obesity among children in the United States is unknown, but estimates range from 5 to 23 percent (Cheek, Schultz, Parra, & Reba, 1970; Collipp *et al.*, 1971; Heald, 1971; Hooper & Alexander, 1971; Johnson, Burke, & Mayer 1956a; Rauh, Schumsky, & Witt, 1967; Seltzer & Mayer, 1970). Mobbs (1970) has reported the incidence of obesity in England as 2.4 to 2.8 percent among elementary school children and 5 to 10 percent among secondary school children. Estimates of the incidence of adult obesity dating to early childhood vary from 19 to 44 percent (Wohl, 1964).

CALIBRATION

Lipids, water, protein, and minerals are regarded as the sole constituents of the body (Withers, 1964). In order to accurately measure obesity it is necessary to measure total body fat. Total body fat, defined as the total weight of the body's ether-extractable material, is not synonymous with adipose tissue, which is fat plus varying amounts of water and other substances (Lesser *et al.*, 1971). Brozek and Keys (1950) and Forbes (1962) have thoroughly summarized methods for determining body composition, and in particular, for differentiating fat and muscle as components of body weight. Tanner (1959) lists four general methods available to estimate man's total body fat: (1) anthropometric, measurement of subcutaneous tissue by caliper or by radiography; (2) direct chemical and physical, fat solvent extraction of the whole or parts of a cadaver; (3) indirect chemical and physical, measurement of body water or density or the combination; and (4) indirect anthropometric. Probably the two most frequently used methods are height and weight tables and skinfold measurements (Stuart & Davis, 1972).

Two methods of estimating subcutaneous fat have been used in man: measurement of skinfold thickness and soft tissue roentgenography. The comparability of the results obtained by the two methods has been reported by Garn (1956). Since Ricker in 1890 (Brozek, 1956) first drew attention to the use of calipers for the measurement of subcutaneous tissue as a means of evaluating nutritional status, considerable interest has been shown in this method. The Franzen caliper (1929) with modification was the first one to be widely used in the United States. Other calipers were developed by a University of Minnesota group (Brozek, 1961) and by Best (1954). In England, the Harpenden caliper was developed (Edwards, Hammond, Healy, Tanner, & Whitehouse, 1955). More recently a skinfold caliper was developed by Lange and Brozek (1961) and demonstrated to measure with negligible error.

The amount of subcutaneous tissue varies in different regions of the body. At a number

of sites, including the triceps, subscapular, abdominal, hip, pectoral, and calf, the skin is loosely attached to the underlying structure so that a fold can be lifted up between the thumb and forefinger approximately one centimeter above the site to be measured. By applying a caliper exerting a standardized constant pressure of 10 gms/mm2, the thickness of the skinfold can be measured (Brozek, Brock, Fidanza, & Keys, 1954). Comprehensive recommendations regarding a standardized technique for measuring skinfold have been made available (Brozek, 1956; Tanner & Whitehouse, 1962).

Skinfold measurement has the advantages of simplicity, practicality, rapidity, reliability, and validity in comparison with other anatomical fat measurements (Brozek & Keys, 1950; Brozek & Mori, 1958; Fry, 1961; Garn & Gorman, 1956; Pascale, Grossman, Sloane, & Frankel, 1956; Seltzer & Mayer, 1965). Skinfold thickness measured at various body sites has been used as the basis for assessing nutritional status (Frisancho & Garn, 1971; Goel & Kaul, 1971; Krehl, 1964), in studying human growth (Corbin, 1969; Fry, Chang, Lee, & Ng, 1965; Hammond, 1955; Malina, 1966, 1971; Stuart & Sobel, 1946; Tanner & Whitehouse, 1962), in analyzing leanness-fatness (Brook, 1971; Brozek, 1961; Brozek & Keys, 1951; Durnin & Rahaman, 1967; Garn, 1956; Garn & Gorman, 1956; Parizkova, 1961; Parizkova & Buzkova, 1971; Pascale *et al.*, 1956; Seltzer, Goldman, & Mayer, 1965; Seltzer & Mayer, 1967; Shepard, Jones, Ishii, Kaneko, & Olbrecht, 1969; Young, 1962; Young, Martin, Chihan, McCarthy, Manniello, Harmuth, & Fryer, 1961), and in anthropometric surveys (Newman, 1956; Pett & Ogilvie, 1956; Rauh & Schumsky, 1968; Reynolds & Grote, 1948; Robson, Bazin, & Soderstrom, 1971; Young, Sipin, & Roe, 1968).

The sites most frequently chosen for skinfold measurements reported in the literature are over the triceps muscle and at the tip of the scapula. According to Seltzer and Mayer (1965), the triceps skinfold is the easiest to measure as well as the most predictive of total body fat. Moreover, it is suggested that there is no particular advantage in utilizing other skinfold sites in addition to the triceps.

Several studies (Garn, 1956; Pett & Ogilvie, 1956; Reynolds & Grote, 1948; Stuart & Sobel, 1946) indicate that subcutaneous tissue in nonobese subjects varies during infancy and childhood with highest values obtained at about one year of age and during the adolescent period. In early childhood sex differences in skinfold measurement become apparent. Generally speaking, there is a steady increase in subcutaneous tissue thickness during the adult years followed by a decline in old age.

Standards for triceps and subscapular skinfold have been published which facilitate the evaluation of nutritional grades and aid in classifying children by percentile norms. Hammond (1955) has reported averages on British children for six skinfolds at each year from ages 2 through 18 years for both sexes. Variability data, however, is lacking. Pett and Ogilvie (1956) have published 10th, 25th, 50th, 75th, and 90th percentiles for triceps of both sexes of Canadian children for each year from 2 to 20 years and then in 5-year increments to age 65 and over. Tanner and Whitehouse (1962) have presented percentile norms for British children. Percentile norms for American elementary school children have been given by Corbin (1969).

Information is limited on the establishment of body fatness norms based on subcutaneous fat measures at specific body sites (Ruffer, 1970). Seltzer and Mayer (1965) proposed that "in the American population the qualification of obesity be reserved for those individuals less than thirty years old in whom the triceps skinfold is greater by more than one standard deviation than the mean." Ruffer (1970) has presented arguments against this criterion and has advanced two alternate indices for identifying obesity. Body fatness norms have been prepared to show obesity standards for both male and female Caucasian Americans (Seltzer & Mayer, 1965). These tables give tricep skinfold thickness which suggests obesity for each age, 5 through 29 years, and for ages 30 through 50 inclusive.

Roentgenographic techniques for measuring body fat are based on the fact that on appropriately exposed X-ray film, the shadow of the skin and subcutaneous tissue can

be distinguished from the underlying muscle. The width of the subcutaneous tissue layer can be accurately estimated under standardized conditions. Techniques for obtaining the radiographic thickness of subcutaneous tissue have been described by Garn (1954) and Reynolds (1944). The correlation coefficient is approximately .85 between measurement of the same site by caliper and by radiography (Baker, Hunt, & Sen, 1958; Brozek & Mori, 1958; Garn & Gorman, 1956; Hammond, 1955). Norms for fat measurement by X-ray have been given by Garn (1954, 1957). Age changes from 20 to 60 years have been reported (Garn & Harper, 1955; Garn & Saalberg, 1953; Garn & Young, 1956). Tanner (1955) has cited literature giving norms for radiographic measurements on children.

As yet there are limited direct chemical methods available for measuring body fat in a living person. Thus, the indirect methods of body density and/or body water are relied upon heavily for estimations. In both indirect methods the basic assumption is made that lean body mass has a constant composition. The fundamental principles of these methods have been fully reviewed (Brozek & Keys, 1950; Keys & Brozek, 1953).

The two methods for measuring body density are underwater weighing with the water kept at 37°C and appropriate corrections made for residual air in the lungs and intestines (Behnke, Feen, & Welham, 1942) and the method of helium displacement (Siri, 1956). Zook (1932) has measured the body density of a group of 5- to 19-year-old boys. Parizkova (1961) has reported standards for body density of 9 to 17 year olds of both sexes. A high degree of correlation between densitometric and skinfold methods has been reported (Brozek & Keys, 1951; Pascale *et al.*, 1956). Other investigators have also studied the relationship between skinfold thickness and densitometric analysis in children (Seltzer *et al.*, 1965; Shepard *et al.*, 1969; Young *et al.*, 1961).

By administering drinking water containing a small amount of tritium or deuterium oxide to a person or by giving antipyrine or urea, body water may be measured. If the assumptions are made that fat free body or lean body mass (LBM) has a constant water content and that neutral fat is deposited dry, it should be possible, therefore, to ascertain total body fat from the water content of the body. Body weight minus lean body mass (72 percent water) would thus equal total body fat (Forbes, 1962).

Although potassium (K) values vary among species, they are known to be relatively constant in both animals and man. Based upon the assumptions that the K content of lean body mass can be considered a constant and that neutral fats can be considered K free, the K content of the body is used as an estimation of fat. The two methods of measuring the K content of the body are by the K dilution technique and the whole body scintillation counter. The calculation of fat from K is made using the following formula: LBM = total K content/Concentration of K per kg. LBM (Forbes, 1962). This relatively new method of determining total body fat is fairly simple with the subject experiencing no discomfort (Barter & Forbes, 1963). Several investigators have attempted to correlate potassium 40 data with anthropometric measurements in adults (Barter & Forbes, 1963) and in children (Forbes, 1964; Forbes & Amirhakimi, 1970).

A method has been developed for determining body fat by uptake of inert gases, since they are more soluble in fat than in lean tissue. Consequently, the uptake by a subject of these gases, such as cyclopropane and Krypton (Kr), is related to the body's fat content. Although this procedure takes more time and is more technically difficult than other techniques, it has the advantage of being a direct rather than an indirect method of assessing body fat in a living person (Forbes, 1962; Lesser *et al.*, 1971).

Although an experienced clinician can visually assess obesity with relative accuracy (Rauh & Schumsky, 1969), this is a qualitative rather than a quantitative index. Quantitative estimates of overweight make use of a variety of tables of *ideal* or *desirable* weights. For children and adolescents the standard weight is based upon age, sex, and height.

The first tables of normal or standard weights widely used in the United States were compiled for the Medico-Actuarial Survey of 1912. Criticisms of the tables include

estimations of height and weight rather than actual measurements; measurement of height with shoes and weight with clothes; lack of differentiation between overweight and obesity; and absence of an explanation regarding the method of classifying patients into three body frames—small, medium, and large (Mayer, 1959; 1970). In 1943 the Metropolitan Life Insurance Company (Seltzer & Mayer, 1965) introduced a new standard table based on new principles.

The basis for the latest and presently most utilized weight tables are the *Build and Blood Pressure Study* of the Society of Actuaries (1959). According to Mayer (1959) it may be questionable to base the diagnosis of obesity and the prescription of an ideal weight for a given patient on height-weight tables, even those as seemingly sophisticated as the ones derived from the *Build and Blood Pressure Study*. In the opinion of Seltzer and Mayer (1965), their standards of obesity for Caucasian Americans based on triceps skinfold measurements "appear to be free of the failings of the insurance tables."

Various height-weight tables devised for use with children include those of Faber (1929), Falkner (1962), Jackson and Kelly (1945), Stuart and Meredith (1946), and Wetzel (1941). Manuel (1924) and Steggerda and Densen (1936) have developed tables for use with minority groups. Although these tables may have limited use in the diagnosis of obesity because they do not differentiate weight into its components, they may frequently be the only tools available for the evaluation of weight.

Other less sophisticated means of determining obesity have been described by Stuart and Davis (1972). These include the mirror test, the twist test, the ruler test, the belt test, the magic 36 test, the ponderal index, and the pinch test.

CAUSES

Physical

Noorden in 1907 (Pawan, 1959) suggested classifying obesity as endogenous or exogenous according to its cause. Similar schemes have been used by Mayer (1953) whose categories were genetic, traumatic, and environmental. Waxler and Leef (1969) grouped causal factors into physiological, metabolic, genetic, or sociological determinants. Other categorizations include genetic, environmental, nutritional, and hormonal (Cheek *et al.*, 1970); and social, psychological, and biological (Stuart & Davis, 1972). Regulatory or metabolic have also been popular etiological classifications (Gordon, 1957; Van Itallie, 1955; Wright, 1962).

Wright's (1962) classification, which is a modification of previous work (Gordon, 1957; Van Itallie, 1955), follows:

I. Regulatory obesity (no primary metabolic abnormality)
   A. Increased caloric intake
      1. "Organic" (central nervous system or disease of the hypothalamus)
      2. "Functional" (psychologic)
         (a) Neurotic overeating
         (b) Non-neurotic overeating (cultural pattern)
   B. Decreased caloric output
      1. "Organic" (forced immobilization of convalescence or disease)
      2. "Functional" (awkwardness in sports, poor social adjustment, sedentary pursuits)

II. Metabolic obesity
   A. Neurologic
      1. Lipodystrophy (rare)
      2. Adiposa dolorosa (rare)

B. Hormonal
   1. Hyperadrenocorticism (rar
   2. Adrenal carcinoma (rare)
   3. Hypothyroidism (rare)
C. Enzymatic
   1. Genetic obesity (in mice
   2. Obese-hyperglycemic syndrome

According to Mayer (1970), in regulatory obesity the "primary impairment is of the central mechanism regulating food intake." In metabolic obesity the "primary lesion is an inborn or acquired error in the metabolism of tissues *per se*."

Endocrine diseases associated with obesity include hypothyroidism, Cushings syndrome, Frohlichs syndrome, and adenoma of the pancreatic islet cells. Goldbloom (1968), however, reports that obesity in childhood, which is attributable to a specific endocrine disorder, is extremely rare.

A hypometabolic state with low protein bound iodine (PBI) has been described in obese patients (Gordon, Goldberg, Brandabur, Gee, & Rankin, 1962; Gordon, Goldberg, & Chosy, 1963). According to Goldbloom (1968), tremendous quantities of thyroid extract have been used over the years in efforts to treat obese persons in whom a deficiency of circulating thyroid hormones was never adequately established. Children with overt clinical, laboratory confirmed hypothyroidism, in fact, do not tend to be strikingly obese, although they may have a somewhat pudgy appearance. Moreover, if some degree of obesity is on occasion associated with hypothyroidism in a particular child, it is never the sole manifestation of thyroid deficiency. As both calorie restriction and increased physical activity would be inappropriate treatments for hypothyroidism, it is important that a positive diagnosis be made. Only sodium-l-thyroxine or dessicated thyroid should be required in treatment (Goldbloom, 1968).

Cushings syndrome is characterized by adrenocortical hyperfunction, obesity which is chiefly truncal, arterial hypertension, purple skin striae, acne, hirsutism, osteoporosis, and glycosuria. This syndrome is rare in adults and still less common in children (Goldbloom, 1968).

Frohlich's syndrome is a rare disorder; however, the term is widely used to designate conditions with obesity and sexual infantilism (Hughes, 1963). The causes are tumors of the hypothalamus or optic chiasma, genetic defects, craniopharyngioma and exanthoma.

According to Hashim and Van Itallie (1965), "the association between maturity-onset of diabetes and obesity is far too strong to be fortuitous." Chiumello, del Guercio, Carnelutti, and Bidone (1969) found that although obesity alone was not indicative of latent diabetes in a pediatric group under study, it could be interpreted as "an additional stress factor in subjects with a hereditary tendency toward diabetes."

Carnelutti, del Guercio, and Chiumello (1970) have studied the possible role of growth hormone in the pathogenesis of obesity. These workers have concluded that the "impairment of growth hormone secretion after insulin-indueed hypoglycemia and arginine infusion may represent a pathogenic and aggravating factor of obesity."

The role of genetic factors in obesity in laboratory animals is clear-cut. Mayer (1953; 1955) has discussed genetic obesity in various laboratory and farm animals. It is more difficult, however, to demonstrate the hereditary nature of familial obesity in man. Although there is evidence that human obesity is in part genetically determined, the mechanism of transmission is obscure (Mayer, 1970).

It has been well established that obesity does run in families (Angel, 1949; Dunlop & Lyon, 1931; Ellis & Tallerman, 1934; Fellows, 1931; Gurney, 1936; Iversen, 1953; Johnson *et al.*, 1956a). These studies have shown a significant relationship between overweight in parents and in children; however, it is difficult to interpret these data, since the incidence of obesity is codetermined by cultural background as well as genetics.

Numerous studies of human identical twins (Bruch, 1957; Kallman, 1953; Newman, 1940; Rony, 1940; Verschuer, 1927) have shown that the body weights are usually similar, although not identical, provided their emotional and environmental status remain unchanged. On the other hand, Ruedi (1969-1970) has reported a set of twins, only one of whom was obese.

Seltzer and Mayer (1964) studied the somatotypes of obese adolescent girls and found that these girls were seemingly "more endomorphic, sometimes more mesomorphic, and considerably less ectomorphic" than nonobese females of the same age. This close correlation between adolescent body types and obesity is additional support for the hereditary nature of obesity in the opinion of Mayer (1970).

The specific obesity syndromes recognized in infants and children include the Laurence-Moon-Biedl syndrome, the Prader-Willi syndrome, and Cushings syndrome which has been described earlier. Laurence-Moon-Biedl syndrome is characterized by marked obesity, polydactyl, hypogenitalism, and sometimes retinitis pigmentosa. Attempts to treat this syndrome are almost always unsuccessful (Goldbloom, 1968).

Prader-Willi syndrome has been termed the H H H O Syndrome—hypomentia, hypotonia, hypogenitalism, and obesity. Since the syndrome was first described (Prader, Labhart, & Willi, 1956), over 100 cases have been reported (Jancar, 1971). Sinclair, Evans, and Wiles (1970) have observed that Prader-Willi is associated with a prediabetic tendency and a poor secretion of growth hormone.

It is generally accepted that the primary cause of obesity is caloric intake in excess of caloric output (Pollack, Consolazio, & Issac, 1958). Hooper and Alexander (1971) and Taitz (1971) found increasing incidence of obesity among infants due to overfeeding. The obese adolescent was most probably an obese baby according to Abraham and Nordsieck (1960). The obese adolescent, therefore, probably has been both bigger and more inactive from birth, with these factors reinforcing one another (Mayer, 1970).

Some investigators have recently concerned themselves with the role of adipose cell size and number in the obesity of both rats (Knittle & Hirsch, 1968) and man (Knittle, 1971). Their research seems to indicate that once a certain point in development is reached the number of adipose cells is unchanged by dietary manipulations. Weight changes thereafter are achieved almost entirely by an increase or decrease in the size of the cells rather than in the number. Salans, Knittle, and Hirsch (1968) have shown that the adipose tissue of obese subjects with enlarged cells experienced a decreased response to insulin. Following weight loss and accompanying decrease in size of the fat cell, the obese patients' adipose tissue regained normal insulin sensitivity. As insulin is involved in carbohydrate metabolism, it would be anticipated that obese persons with enlarged, insulin hyposensitive adipose cells would experience inefficient carbohydrate metabolism.

Psychosocial

As with biological mechanisms, purported psychosocial influences on obesity have ranged from a minor, predisposing role to a prepotent set of conditions. All ranges and degrees of psychosocial influence have been documented in the literature and a case made for each. However, it is not clear that any subvarieties of obesity exist that can be based exclusively on psychosocial factors.

Obesity in certain cultural and socioeconomic groups is considered by members of those groups to be a sign of good health and adjustment, and the consumption of large amounts of food may be considered good manners. Goldblatt, Moore, and Stunkard (1965) found that obesity was six times more common among low status women than high status women, and that the upwardly mobile were less obese than the downwardly mobile. Interestingly, the longer a woman's family had been in this country, the less likely she would become obese. Similar relationships held for men but were less marked. Ethnic

differences were also found. For example, 9 percent of the females of British descent were obese; whereas, 27 percent of women of Italian background were obese. Matching for social class reduced these differences but did not eliminate them. These findings are important in that they point out the possible influence of social and cultural factors in some types of obesity, if not in all. As Goldblatt, *et al.* (1965) stated, "Obesity may always be unhealthy, but it is not always abnormal." The fact that social class has also been implicated in heart disease suggests that obesity possibly contributes to this correlation.

Family interactions in the development of both obesity and anorexia have been considered by Bruch (1971) as caused by inadequate feedback from the environment which would allow the distinguishing of hunger from emotional tension and other irrelevant states. Bruch (1940) has also suggested that obese children were often the only children in a family or the youngest, and in many instances, were the result of unwanted pregnancies. She reported that trauma, including hospitalization, is an important etiological factor. Similarly, Kahn (1970) found that separation from the mother was related to the development of obesity in ghetto children. In this study, 32 percent of 72 obese children had mother surrogates, while only 8 percent of 72 nonobese children had been separated. The absence of working mothers apparently had no effect. While mother-child separation has frequently been implicated in failure to thrive, this study points up the possibility of an opposite effect—overnutrition.

Early feeding practices have also been implicated as possible causes for obesity in children. Taitz (1971) found that artificially fed 6-week-old infants were heavier than predicted from birthweight and showed an increased incidence of excessive weight gain. This is consistent with the previously mentioned theory that the number of adipose cells are determined early in life (Knittle, 1971), and that overfeeding can produce excessive numbers of these cells which can only be reduced in size not in number. The Hooper and Alexander study (1971), cited previously, also implicated overfeeding in obesity. Asher (1966) found that among 269 children treated for obesity more than half were still obese during adolescence. Of these 269 children, 44 percent had been overweight since infancy. Davies and Hughes (1971) suggested that proper early feeding practices can also prevent hypertension because of excessive salt intake.

Some studies have indicated that it is not necessarily overeating that produces obesity, but reduced energy expenditure. Although such inactivity has sometimes been confounded with a diet regime and occasionally has only been found in adults and not in children or adolescents, it is an important variable that may be significantly affected by family influences. It is obvious that some families participate actively in sports, hiking, etc., while others do not. What effect such family differences have on obese children will hopefully be clarified by further research.

Investigations of learning and perceptual influences on obesity have reported some striking differences between the obese and nonobese, many of which are of etiological significance (Cabanac & Duclaux, 1970; Coddington & Bruch, 1970; Goldman, Jaffa, & Schachter, 1968; Karp & Pardes, 1965; Mayer, Monello, & Seltzer, 1965; Nisbett, 1968; Schachter, 1967, 1968, 1971a; Schachter, Goldman, & Gordon, 1968; Schachter & Gross, 1968; Stunkard, 1959; Stunkard & Fox, 1971). In a recent summary of this area, Schachter (1971b) compared point by point the similarities between the behavior of the obese human and that of the hyperphagic rat lesioned in the ventromedial nuclei of the hypothalamus, as well as the differences between obese and nonobese subjects of both species. In short, he reported that both obese humans and rats (1) eat more of good tasting food than normals, (2) eat less of bad tasting food than normals, (3) eat only slightly more than normals, (4) eat fewer meals per day than normals, (5) eat more per meal than normals, (6) eat faster than normals, (7) react more emotionally than normals, (8) are less active than normals, (9) eat more than normals when food is easy to get, (10) eat less than normals when food is hard to get, (11) do not regulate food intake when preloaded with

solids, (12) do regulate food intake when preloaded with liquids. Schachter (1971b) also pointed to similarities between the hibernator, ventromedial animals, and unlesioned obese animals, which Mrosovsky (1971) suggested result from a functionally quiescent ventromedial hypothalamus. Schachter, however, felt that even if specific physiological mechanisms are identified which regulate food intake, the psychological mechanisms will still need to be described. In this regard, he has postulated as the primary psychological mechanism, external versus internal control. Many studies have shown the behavior of the obese subject to be under external rather than internal control, and Schachter proposed that these individuals are *stimulus bound*. He pointed out that in the absence of food related cues, the obese can fast easier than normals; and that in the presence of these cues, they have a harder time fasting.

In testing for the generality of external control, Schachter and his colleagues have discovered that the obese recall more objects and words from visual presentations than normals, are faster in complex reaction time than normals, and are better at proofreading. On the other hand, the hypothesis predicts that distracting stimuli should be more disruptive than for the nonobese, and this seems to be the case (Rodin, 1970). In extending the external-internal control hypothesis further, Schachter suggested that the tendency not to work for food may be a function of the remoteness of the stimulus rather than the amount of work involved. His hypothesis has been confirmed by at least one investigator (Johnson, 1970). Activity also appears to be a function of the stimulus field, for when stimuli are prominent (noise, etc.), the otherwise inactive obese animal becomes more active than the nonobese and lapses into inactivity primarily when there is little stimulation. Schachter felt that most of the other differences between the obese and nonobese can be explained on the basis of the external-internal theory. He did not suggest, however, that this theory is free of problems or that the hypothalamus has necessarily been implicated in human obesity expect by analogy. What he has made clear is that differences do exist in the behavior of obese and nonobese subjects and that a single source of control (external) is strongly implicated in at least some types of obesity.

The identification of the external-internal dimension of obesity appears to have been a useful hypothesis and does summarize the essential features of a number of studies. Unfortunately, Schachter's compelling arguments, derived from a review of some of the few experimental investigations of obesity, have not been tested on obese children or adolescents. Certainly determining differences between those whose obesity was acquired as children and those whose obese state occurred later would be of theoretical and practical significance. Similarly, there is a need to study the external-internal dimension in subjects with gradual versus rapid onset.

The influence of personality factors on the development of obesity is not known. While dynamically oriented explanations have emphasized defective personality functioning in causing obesity, some investigators (Stunkard, 1959) have not been able to identify such differences. Stuart and Davis (1972) felt that those differences which do exist are primarily consequences of the obese state rather than causes. Some of the data supporting this position will be covered later.

In one of the relatively few studies using children, Iversen (1953) studied 40 Danish children and reported that in 16 cases psychological factors influenced obesity; whereas, in 24 cases there was no evidence of such influence. In only four cases was obesity absent in parents and siblings. Varying degrees of emotional or adjustment difficulties were found in 26 cases. Also attempting to identify critical biographical events coinciding with the onset of obesity, Rotmann and Becker (1970) found that out of 33 adult patients, 26 could exactly date the onset of obesity. In about half the cases onset was gradual, and in about half it was rapid with a wide variety of triggering events reported; foremost among them was separation from important objects.

Premack (1965) has analyzed the reinforcing characteristics of various behaviors and has demonstrated that eating and drinking serve not only as reinforcers for other behaviors but may in turn be reinforced by higher probability behaviors. It has been repeatedly demonstrated that animal subjects will eat or drink far in excess of their daily requirements in order to engage in higher probability behavior such as running. This view of ingestive behaviors indicates that food intake is merely another behavior subject to reinforcement principles. Eating, thus, may serve as the instrumental response in producing the secondary gains often described in clinical practice such as anxiety reduction, avoidance of threatening situations, etc. Again, there is scant evidence that such factors are a frequent cause of overeating in adults and the hypothesis seems even less compelling in the case of children. Those who do seek help for obesity may be persons for whom psychological factors are more important as either precursors to eating or as consequences.

CONSEQUENCES

Physical

Obesity in adults is a major health problem! The hazardous consequences of adult obesity have been widely studied and found to involve a high incidence of mortality and morbidity. Data are available to indicate that with moderate obesity mortality increases by 42 percent, and with marked obesity mortality increases by 79 percent (Marks, 1961).

Juvenile obesity, although common, is probably not regarded seriously as a health problem by most pediatricians or family physicians. Childhood obesity has not been shown except in rare cases to be associated with high mortality or morbidity rates (Heald, 1971). In general, juvenile obesity is regarded as a rather benign, if unsightly condition, usually associated with excessive eating. However, because childhood obesity usually persists into adulthood (Abraham & Nordsieck, 1960; Gurney, 1936; Le Marquand, 1951; Mullins, 1958), the obese juvenile is at risk as an obese adult. Mobbs (1970) reported that approximately 80 percent of overweight children will grow into overweight adults. Furthermore, obesity that develops in childhood is more difficult to treat than adult onset obesity (Mullins, 1958).

Studies have shown that obese children experience early onset of puberty and have prepuberty heights above standards (Wolff, 1955). A long-term study of obese children, however, found their adult heights were significantly below standard, even though their prepuberty heights had been above standard (Wolff, 1955). Early menarche and early onset of obesity in girls have been associated (Seltzer & Mayer, 1964; Craig & Bayer, 1967).

There is considerable evidence that the incidence of hypertension is significantly greater among obese than nonobese persons (Mayer, 1969). Studies have shown that weight reduction in such cases will result in a fall in the elevated blood pressure (Fletcher, 1954; Rose, 1922). Dahl, Silver, and Christie (1958), however, found that weight reduction in obese hypertensive persons was not frequently associated with fall of blood pressure, but it did appear to be closely related to restriction of sodium chloride. In a study of hypertension in otherwise apparently normal children, Londe, Bourgoignie, Robson, and Goldring (1971) were unable to find obvious etiology in the majority of the children; however, there was a significantly greater incidence of obesity among the hypertensive than the nonhypertensive subjects.

Inadequate adjustment of the circulatory system to physical activity is another serious side effect of obesity (Mayer, 1970; Mobbs, 1970). The Pickwickian syndrome, also termed the cardio-pulmonary obesity syndrome, is perhaps a secondary complication

of extreme obesity as a result of respiratory difficulties. This syndrome, characterized by marked obesity, somnolescence, cardiorespiratory insufficiency, intermittent cyanosis, and periodic respiration, has been described in at least 75 adults. The syndrome, however, is rare in children; approximately eight cases had appeared in the literature as of 1969. It is generally agreed that the respiratory complications are reversible with loss of body weight. The best treatment is an early calorically restricted diet (Metzl, Keitges, Kantor, & Bordy, 1969).

Another common consequence of obesity is musculoskeletal defects, especially in the lower extremities. Genu valgum (knock-knee) and weak, flat, or externally rotated feet are the most frequently observed. These defects can almost always be diagnosed in children who have been fat for an extensive period of time (Hoffman, 1957; Mobbs, 1970). Other related consequences of obesity include increased lumbar lordosis, rupture of intravertebra disks and osteoarthritis (Mayer, 1970). In addition, obesity is a major cause of foot fatigue (Bradley, 1971).

Endocrine and metabolic disturbances related to obesity include hirsutism, menstrual irregularities, hyperglycemia (adult onset diabetes) and elevated cholesterol, triglycerides, and fatty acids (Mayer, 1970). Hyperinsulinemia, also characteristic of obesity, may be in part the result of excessive caloric and carbohydrate intake instead of solely a manifestation of the insulin antagonism accompanying obesity (Grey & Kipnis, 1971).

Also associated with obesity are difficulties in reproduction, gallbladder disease, excessive perspiration, skin problems, increased surgical risk, and immobilization (Mayer, 1970). Moreover, Seltzer and Mayer (1963) and Seltzer, Wenzel, and Mayer (1963) found that iron deficiency anemia was more prevalent among obese than nonobese subjects.

Psychosocial

Stunkard and Mendelson (1967) felt that only two behavioral disturbances could be specifically related to obesity: overeating and body image. Although it is possible to add reduced activity to these categories, body image or body concept appears as a persistent personality problem in the literature on obesity. Body concept is a poorly defined term from a theoretical and operational standpoint and refers essentially to a subject's report as to the size (quantitative) or appearance (qualitative) of his physique. There is some evidence that obesity directly influences body image. Stunkard and Burt (1967) reported that disturbance and/or negative evaluations of body size or shape develop during a relatively short period of time in childhood and adolescence. Persons becoming obese during their adult years did not develop negative evaluations; whereas, adults whose obesity originated during childhood did and subsequently maintained these negative evaluations irrespective of their body size. These findings are in agreement with a developmental study by Faterson and Witkin (1970) in which body concept was *articulated* increasingly between the ages of 8 and 14 years with little change after those ages.

Whether or not body image is as persistent and unalterable as some have reported was questioned by Fransella and Crisp (1970), who found that in two obese females perception of self varied from positive to negative as a function of weight gain or loss. Glucksman and Hirsch (1969), in a study with the severely obese, showed adults tended to overestimate size *(phantom body size)* during weight reduction; whereas, slightly prior to reduction, they underestimated actual size. This study used a rather novel technique in which the subject could adjust his own image with a dial whose settings controlled a variable anamorphic lens. Another technique for studying body image is the ever popular figure drawing in which larger figures are interpreted as larger body images (Bailey, Shinedling, & Payne, 1970).

Another aspect of personality which has been linked with obesity is verbal behavior. Weintraub and Aronson (1969) noted that female *overeaters* differed from control subjects in 10-minute speech samples. They used fewer nonpersonal references, more negators, more expression of feelings and more retractors. In a study of 88 obese adolescent girls, Werkman and Greenberg (1967) found consistent personality difficulties on personality and interest tests. As previously mentioned, some investigators have not found reliable personality differences between the obese and nonobese (Stunkard, 1959). No differences in areas such as high school academic performance have been found (Canning & Mayer, 1967).

If there is some doubt about the personality of the obese differing from the nonobese, there is less doubt about how other people perceive the obese. Wolfgang and Wolfgang (1971) found that people position themselves significantly farther from the obese and social deviants than from normal subjects. In an unpublished study the present authors found that preference for the obese in a minimal contact situation (seated adjacently on a bus) is similar to that of minority groups but above that of other groups, such as drug users or sex deviants. Monello and Mayer (1963) also found the obese to be similar to minority groups in many respects, and Canning and Mayer (1966) suggested some discrimination in college acceptance for the obese female in particular. The negative stereotype appears to develop at a fairly early age as reported in a series of studies on kindergarten children (Lerner & Gellert, 1969; Lerner & Schroeder, 1971a, 1971b). In one study, they found kindergarten children could accurately match their own body builds and those of others. Although no particular body shape was preferred, there was a consistent aversion to *chubbiness* in 86 percent of the children. In a later study using same sex figure drawings, the average physique was preferred and the fat physique was disliked. The authors concluded that the physique preferences of kindergarten children are consistent with society's preference for average body builds. Maddox, Back, and Liederman (1968) pointed out the socially disabling aspects of obesity and supported a negative stereotype of fatness. In their study using a picture ranking task, obese children were reported as being less likeable than children with recognized physical disabilities. Moore, Stunkard, and Srole (1962) also found negative personal and social consequences. Staffieri (1967) studied 90 males between 6 and 10 years of age and asked them to assign adjectives to behavior and personality traits of silhouettes representing extreme endomorphic, mesomorphic, and ectomorphic body types. Unfavorable adjectives were assigned to both the endomorphs and ectomorphs. They also found that accuracy in self-perception of body types occurs between 7 and 10 years of age; 8 to 9 years was the probable time when dissatisfaction with one's body type begins, if it differs from the mesomorphic variety.

The importance of physical attractiveness in dating, marrying, and other important interpersonal behavior is apparent and well-documented (Berscheid, Dion, Walster, & Walster, 1971; Miller & Rivenbark, 1970; Stroebe, Insko, Thompson, & Layton, 1971). It can be concluded that whereas obesity affects personality and emotional functioning in ill-defined ways, it has a devastating effect on a person's ability to be accepted in most social situations. If, as is probably the case, the obese are subject to the same prejudices as others in society, it is not surprising that their body image, self-concept, etc. is poor, and that many of their adjustment problems result from an unsympathetic, rejecting society.

CURES

Physical

To read the ads for a wide variety of special foods, pills, drinks, regimens, beauty

spas, and reducing salons and to hear conversation of dieters, one would think that conquering obesity is accomplished by simply walking into the nearest drugstore or weight reducing parlor. For example, baths have frequently been recommended: hot baths, cold baths, hot showers, cold showers, Turkish baths, Russian baths, steam baths, and electric light cabinets. By causing profuse perspiration, all of the hot baths can produce a transient weight loss. In fact, a person may lose as much as two pounds in one hour as a result of water loss from tissues. Theoretically, however, a person would have to take 370 hot baths, in each of which the body temperature was raised three degrees Fahrenheit for one hour, in order for that person to lose one pound of adipose tissue (Kruesen, 1953).

Another popular technique for weight reduction is massage which has been defined as the manipulation of the tissues of the living human body, either manually or by means of mechanical devices. No form of external manipulation, however, appears capable of removing adipose tissue from a particular region of the body. Massage does not reduce local deposits of fat, nor increase muscular strength, nor cause any significant change in the basal metabolic rate (Kruesen, 1953).

Countless false claims are made for procedures and devices supposedly effective in *spot reducing* adipose tissue. However, baths, massages, and spot reducing usually involve a special low calorie diet somewhat surreptitiously introduced along with the highly lauded physical procedure. *Any* weight reduction program deserves close screening by those considering weight loss, particularly if the program is to be used by children.

Although none of the new anorexigenic drugs appears very promising in the treatment of obesity, various preparations continue to be prescribed as "eloquent testimony that the problem has not been solved" (Hashim & Van Itallie, 1965). Physicians often resort to drug treatment for their obese patients as a matter of convenience. According to Mayer (1970), thyroid hormone is too often indiscriminately prescribed to obese patients without benefit of adequate diagnosis of hypothyroidism. Patients themselves frequently fall prey to high pressure advertising of over-the-counter medicines. American Medical Association officials indicate that reducing fads cost the U. S. population 100 million dollars annually (Mann, 1971).

The current anorexigenic drugs are amphetamines, sympathomimetic amines, and related compounds which act primarily by stimulating the ventromedial area of the hypothalamus and possibly secondarily by inducing spontaneous activity and release of free fatty acids by the fat tissues. Generally speaking, amphetamines are effective for a period of 6 to 8 weeks and are most useful in early treatment. Side effects, including dry mouth, irritability, restlessness, insomnia, and constipation, have been observed in a number of patients (Mayer, 1970).

Hoffman (1957), in a 3-year study of 60 obese children, prescribed anorexigenic drugs because "the patient who is not hungry will be less likely to deviate from the diet plan." Noble (1971) studied the effectiveness of anorexigenic drugs versus placebo in a controlled weight reduction program and found that one and one-half times as many patients on drugs as on placebo lost weight.

Some (Mobbs, 1970; Read & Heald, 1965) believe it is inadvisable to use drugs in the treatment of childhood obesity. In the opinion of Mobbs (1970), thyroid stimulating drugs may be "positively harmful," amphetamines are of "little value" because of their short-lived effectiveness; and, moreover, the latter are habit-forming, although addiction in children is rare. Mann (1971) felt "the most disgraceful chapter in the professional management of obesity is extracted from the current drug scene." A number of physicians take a more moderate view in supporting anorexigenic drugs as part of the total weight reduction program but never *the* treatment (Fineberg, 1967).

Payne, DeWind, and Commons (1963) have introduced a surgical procedure that permits bypass of a large portion of the small intestine as a treatment of severe, intractable

obesity. These procedures (Barron, Frame, & Bozalis, 1969; Payne & DeWind, 1969; Scott, Sanstead, Brill, Burko, & Younger, 1971), their metabolic effects (Bondar & Pisesky, 1967; Lewis, Turnbull, & Page, 1962, 1966; Payne *et al.*, 1963), and resultant weight losses (Barron *et al.*, 1969; Payne & DeWind, 1969; Payne *et al.*, 1963; Shagrin, Frame, & Duncan, 1971) have been reported.

Several complications of the bypass, including severe diarrhea, internal herniation, abdominal discomfort, intussusception, electrolyte imbalance, vitamin deficiencies, polyarthritis, fatty degeneration of the liver, and hypocalcemia, have been discussed in the literature (Barron *et al.*, 1969; Bondar & Pisesky, 1967; DeMuth & Rottenstein, 1964; Drenick, Simmons, & Murphy, 1970; Juhl, Christoffersen, Baden, & Quaade, 1971; Kaufmann & Weldon, 1967; Maxwell, Richards, & Albo, 1968; Mulcare, Dennin, & Drenick, 1970; Shagrin *et al.*, 1971).

Evaluations of the effectiveness of the surgical procedure range from "miserable" (Mayer, 1970) to promising, if careful, long-term, medical follow-up is available (Barron *et al.*, 1969; Juhl *et al.*, 1971). According to Barron *et al.* (1969), "the shunt procedure can be performed with reasonable safety in properly selected, well-motivated and relatively young patients." Several studies have reported the use of this procedure on patients as young as 16 or 17 years (Barron *et al.*, 1969; Juhl *et al.*, 1971; Scott *et al.*, 1971; Shagrin *et al.*, 1971).

Total starvation or fasting, introduced by Bloom (1959), is a relatively new and increasingly popular method of treating chronic obesity. Duncan, Jenson, Fraser, and Cristofori (1962) later popularized the use of short periodic fasts; and subsequently, Drenick, Svendseid, Blahd, and Tuttle (1964) reported dramatic weight losses produced by longer periods of starvation.

Several reports are available regarding the effectiveness of fasting as a treatment method for obesity; however, they are limited almost entirely to adults (Nathan & Pisula, 1970). Kollar, Atkinson, and Albin (1969) studied hospitalized superobese patients on fasting regimens and found that 90 percent attained major weight losses. A similar percentage regained considerable weight following discharge. Sims and Horton (1968) and Ball, Canary, and Kyle (1970) reported on endocrine and metabolic aspects of fasting in the treatment of obesity. Forbes (1970) reported that obese subjects during fasting quickly lose approximately four percent of total body weight; the remaining weight has an average half life of 204 days and 237 days in males and females, respectively.

Starvation does appear to have its hazards; hyperuricemia, decreased renal clearance of uric acids, symptoms of gout, orthostatic hypotension and anemia, as well as catabolism of undesirable amounts of lean tissue and negative nitrogen balance have developed in patients undergoing fasting as a treatment for obesity (Wohl, 1964). Sims and Horton (1968) and Ball *et al.* (1970) have also reported on the endocrine and metabolic aspects of fasting.

In the limited research available on children, Garces, Kenny, Drash, and Taylor, (1968) have reported on the metabolic aspects of starvation; and Spahn, Plennert, and Palhenheimer (1967) have described their experiences with the fasting of 40 children ages 6 to 14 years. In the latter study the weight losses reported were similar to those found in fasting obese adults; the weight losses for both groups were greatest during the first 3 days. These investigators indicated that the children appeared to be able to tolerate a fast of approximately 10 days as well as adults.

Nathan and Pisula (1970) have reported on psychological observations of obese adolescents during starvation. In this study a follow-up revealed that approximately three-fourths of the adolescents had regained or exceeded their admission weights.

Psychosocial

Rony (1940) observed a common tendency for decreased muscular activity among

many obese persons. Moreover, he noted that as weight increased the inclination for physical activity decreased, thereby resulting in a decreased energy requirement in spite of the increased body weight. As a consequence, caloric intake continued to exceed caloric output.

One reason often advanced for neglecting exercise as a factor in weight control is that "it consumes very little energy." This is inaccurate since, according to Mayer (1966), the energy expenditure of human beings can be tripled by vigorous exercise.

Another fallacy advanced to justify neglecting exercise is that "if you exercise more, you eat more, and therefore the whole process is self-defeating." This is not true at low levels of energy expenditure. For example, if rats exercise more than an hour, their food intake increases over and beyond their usual intake corresponding to one hour, and under these conditions, the body weight remains constant. If the length of exercise is further increased, appetite increases until the animal is exhausted and starts eating less. More relevant to the problem of obesity is what happens at very low levels of energy expenditure. If exercise keeps on being decreased, a point is reached when the food intake no longer decreases. As a matter of fact, it significantly increases again, because of decreased utilization of glucose under these conditions. This is also true in man (Mayer, 1966).

Bullen, Reed and Mayer (1964) studied the physical activity of obese versus nonobese adolescent girls and found the obese girls exercised less frequently and less vigorously. The relative inactivity of many obese children was also noted by Bruch (1940). Inactivity has been further suggested as a causal factor in obesity by Porter (1920), Stuart and Stevenson (1954) and Johnson, Burke, and Mayer (1956b), who observed that children tended to gain more weight during the fall and winter months than during the other seasons.

Johnson *et al.* (1956a, 1956b) compared the food intakes and activity schedules of obese and nonobese girls and found the obese to be significantly less active and to consume significantly fewer calories than their nonobese counterparts. In other words, physical inactivity rather than overeating appeared to be responsible for the positive energy balance. Similarly, Stefanik, Heald, and Mayer (1959) studied the caloric intake and physical activity of paired obese and nonobese boys and found the caloric intake of the obese boys to be significantly less as was their degree of participation in active exercise.

Work with adolescents at Camp Seascape (Peckos, Spargo, & Heald, 1967) has shown that the ideal way to lose weight is to cut portions of most foods, especially those that are high in starch and fat, by one-third or even one-half. This is a weight reduction principle widely accepted by nutritionists and dietitians.

Huenemann, Shapiro, Hampton, and Mitchell (1966) had 122 subjects keep four weekly diet diaries over a period of 2 years. Two of the diaries were kept during the eleventh and twelfth school years and two during the intervening and preceding summer vacations. The following observations were made on the obese teenagers: the obese boys and girls were the breakfast skippers; the obese boys reported more daytime snacks than other boys; the obese girls tended to eat fewer snacks and meals than the other girls; and the obese boys and girls ate smaller amounts of dairy products, vegetables, and fruits than did other subjects.

Some adolescents feel that the way to lose weight is to skip meals; especially popular is the skipping of breakfast. Peckos *et al.* (1967) found that breakfast skippers and skimpers showed poor performance in the classroom and in athletics, dislike for school, a real work sag particularly before noon, lack of endurance for jobs requiring strength, and high caloric nibbling all day. Parson estimated that 60 percent of all fat persons eat only one big meal a day, perhaps skipping breakfast, skimping on lunch, and fasting between meals. He likened people with such eating habits to rats which were trained to eat within a 2-hour period and consequently consumed more in that time than did their

counterparts which nibbled throughout the day (American Medical Association, 1963).

Today there are a number of diet foods on the market including diet salad dressings, diet colas, diet canned fruits, diet breads and diet margarines, to name a few. Some investigators (Peckos *et al.*, 1967) do not endorse the use of the dietetic foods. They feel the use of dietetic foods is not natural, and that it is more important to learn to use as many natural foods as possible because dietetic foods are not universally available. This is a particularly pertinent point with regard to the nutrition education of children.

Another popular approach to dieting is based on pharmaceutical formulae diets consisting of protein derived from milk and or soya flour; fat from milk, corn and/or coconut oil; carbohydrate from lactose, sucrose, and/or starch; and vitamins and minerals. The latter two are added in amounts which equal or exceed known requirements with the amount varying greatly with the individual product. These formulae preparations supply about 900 calories per day consisting of approximately 30 percent protein, 20 percent fat, and 50 percent carbohydrate (AMA Council Statement, 1961).

One of the most important objectives in any long-term weight control program with children or adults is that of education in good dietary habits. This type of education is best achieved by building the therapeutic diet around ordinary foods. A formula diet is a preparation which in no way resembles the obese individual's ordinary diet. Consequently, the obese subject is unable to appreciate the difference in food composition between the formula and his ordinary diet. Furthermore, monotony of the formula diet may result in abandonment after a short period, at which point the patient usually resumes his normal food intake without the benefit of proper nutrition education. Misuse of some of the formula products has been indicated by those who assumed they have a specific *pharmacological effect* and used them in addition to a regular diet. Both diarrhea and constipation have been reported by users of formulae diets.

Two reasons why so many markedly obese persons fail to lose sufficient weight on a moderately calorically restricted diet are the relatively slow loss and the persisting hunger pangs (Drenick, 1967). It is generally agreed, however, that children and adolescents should not be given severely restricted diets because of possible growth impairment (Drenick, 1967; Goldbloom, 1968). Moreover, caloric restriction should be instituted only after metabolic causes have been ruled out.

Goldbloom (1968) has suggested concentrating caloric restriction to the carbohydrate foods. This approach preserves palatability of the diet, increases the diet's acceptability among obese children and teenagers, makes possible dietary instructions which are more qualitative than quantitative, and allows the whole family to eat similar foods.

Some workers have studied the effectiveness of diet in the weight reduction of obese subjects. Dwyer, Feldman, and Mayer (1967) studied dieting practices among adolescent girls and found that obese dieters started dieting younger, dieted longer, and lost more weight on their diets than the nonobese dieters. In a follow-up study of 65 obese adolescents, Hammar, Campbell, and Woolley (1971) found 19 ceased to be obese, 46 remained obese, and 12 sustained the weight loss begun during clinic visits. Obese adolescents treated by a dietary instruction approach were more successful in losing and maintaining weight loss than were those treated by a nondietary approach.

Because the implementation of either diet or exercise programs requires a change in the obese person's daily habits and because these changes have been difficult to achieve and maintain, behavior modification approaches have been increasingly utilized to obtain the self-control necessary for effective weight loss. Much of this literature has been recently reviewed by Stuart and Davis (1972). However, little research is available on the application of behavior modification techniques to children and to retarded populations where variations of these techniques may be required in order to be successful. For example, the present authors in an unpublished study have found that parents may actually interfere with the progress made by their child in modifying his eating and exercise

patterns, or they may be completely unconcerned over significant degrees of obesity and thus fail to take simple actions that will lead to weight loss. With the retarded or young child, the parent must accept the bulk of the responsibility for the child's weight; whereas, with older, normal children, the child may respond positively to weight control programs in spite of the parents' attitude. In general, it is essential that behavior modification procedures be applied to both the child and parent. The additional complexity of working with both parents and child plus the lack of concern noted in many parents of obese children, may account for the lack of studies reported using behavior modification techniques with children. With adults, however, a number of behavior modification studies have demonstrated not only increased weight loss, but the possibility that weight loss can be maintained more effectively with behavioral approaches than with psychological or medical approaches.

Programs built upon a classical conditioning or respondent paradigm have shown moderate effectiveness with the reporting of some unfavorable reactions to treatment. The pairing of noxious stimuli with neutral or pleasant stimuli in order to effect a shift toward negative preferences has a long history in psychological research. Only in a few instances, however, has this procedure been applied to modify obesity. Meyer and Crisp (1964) in treating two female inpatients found electric shock delivered for approaching food was effective in reducing weight in one patient; whereas, the other patient terminated treatment because of the unpleasantness of the technique. Whether or not this study is a case of operant or respondent behavior is debatable. Foreyt and Kennedy (1971) did demonstrate weight loss as a function of pairing favorite foods with noxious odors over 9 weeks of training. Follow-up data after 48 weeks did not show significant differences between the two groups, however. Using a *covert sensitization* approach, Cautela (1966) reported limited success, as did others (Meynen, 1970; Tyler & Straughan; 1970). In their review of this literature, Stuart and Davis (1972) suggested that attempts to condition negative reactions to previous positive stimuli and conversely to condition positive reactions to negative stimuli are of limited value, in that they probably emphasize eating as being under internal control rather than external, and for the most part are not sufficient to offset the powerful reinforcement effects of eating. Another major limitation of such approaches is that they focus on only one aspect of obesity, eating, which as previously mentioned is not always excessive. Further, classical conditioning approaches do not really train the subject to control his environment in a way that will influence both his eating patterns and physical activity.

Operant conditioning techniques, on the other hand, are applicable to stiuations where environmental contingencies influence behavior through reward or punishment. Operant analysis provides techniques whereby a person may learn to avoid situations that result in excessive or inappropriate eating, inactivity, etc. and to increase the probability of appropriate eating and increased activity, etc. As with respondent techniques, there are few large-scale, controlled studies of the effectiveness of operant procedures in modifying obesity. Stuart (1967) actually combined respondent and operant approaches in treating eight female adults. He demonstrated a mean weight loss of one pound per week. Harris (1969) demonstrated more clearly the importance of the operant component in a weight reduction program by showing that covert sensitization did not improve the performance of the group. Unfortunately, few patients were really obese; and only 21 percent of those remaining in treatment lost as much as 20 pounds. Wollersheim (1970) also found operantly based treatment to be more effective than other therapies, although all experimental groups showed losses superior to the untreated control subjects. Similarly, Penick, Filion, Fox, and Stunkard (1971) compared behavior modification with traditional group psychotherapy and found vastly superior performance from the behavior modification group. Work with psychiatric obese patients indicates they respond similarly to operant techniques (Ayllon, 1963; Bernard, 1968; Harmatz & Lapuc, 1968; Upper & Newton, 1971).

CONCLUSIONS

The most obvious conclusion from a review of research on obesity in children and adolescents is that here is a problem with major practical and theoretical implications which is virtually untouched with regard to well-controlled experimental studies. For example, the important external-internal hypothesis has not been studied in children. Similarly, little is available on treatment approaches with children, and one of the most promising set of techniques (behavior modification) is not reported as having been attempted with children.

Ample evidence has been presented to show that obesity is both a physical as well as a social handicap. The need to develop methods of early identification and treatment is clear. By identifying the mechanisms that produce the obese state in children or that are precursors to adult onset obesity, we will not only be in a position to prevent and control the disorder but will have added significantly to our knowledge of developmental processes.

Hopefully, we are past the stage of oversimplistic explanations of the cause of obesity (eating too much) or of its cures (don't worry-he'll outgrow it). Its complexity has been documented with the positive sign that most obesity is *regulatory* and thus amenable to psychosocial approaches. This paper has shown the interdisciplinary nature of the problem, and, hopefully, a joint attack by several disciplines will be productive in reducing its frequency and cost to society.

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LONG-TERM RESEARCH

Note: The reports in this section concern research programs that are continuous.

30-AA-1 LONGITUDINAL STUDY OF CHILD GROWTH AND DEVELOPMENT

Investigator(s): Lester W. Sontag, M.D., Director Emeritus; and Frank Falkner, M.D., Director, Fels Research Institute for the Study of Human Development, Antioch College, 800 Livermore Street, Yellow Springs, Ohio 45387.
Purpose: To study adult personality, adjustment, and aging processes of subjects whose health, growth, personality development, and environment have been studied since birth.
Methods: The program included a study of the aging processes of the subjects' parents in relation to physical and biochemical measures made earlier. It will include studies of parental childrearing practices in the same families for two generations, constancy of autonomic response patterns to stress from childhood to young adulthood, and the relationship of response patterns to psychosomatic disorders in adulthood. Blood lipids in relation to body composition and change in composition will also be studied.
Cooperating group(s): Public Health Service, U. S. Department of Health, Education, and Welfare.

30-AA-2 LONGITUDINAL CROSS-CULTURAL STUDY OF HUMAN DEVELOPMENT

Investigator(s): Harben Boutourline Young, M.D., Research Associate, Human Growth and Development, School of Public Health, Harvard University, Boston, Massachusetts 02115. (Address correspondence to: Harben Boutourline Young, M.D., Harvard Florence Research Project, Via Venezia 10, Florence, Italy.)
Purpose: To observe the long-term effects of environment on growth and health; i.e., the influence of environmental factors upon physical and mental development, and their mode of action and interaction with genetic endowment.
Subjects: Several hundred males, studied from prepuberty, each with four grandparents from the same geographical zone of southern Italy, who now live in the markedly different cultures of Boston, Rome, and Palermo; other groups of 100 girls and several hundred boys in Florence, Italy; and 200 girls in Boston.
Methods: Repeated medical, anthropometric, and psychological examinations have been conducted, family interviews held (to evaluate childrearing practices), and nutritional and sociocultural data have been collected. Current work under analysis includes a cross-cultural study of moral values; studies of biological age and its estimation; estimation of socioeconomic status across cultures; and a study of changing hemoglobin values in adolescent males. Work that involves further and continuing data collection includes prediction of growth variables; a cross-cultural study of creativity and its environmental determinants; a study of left-handed subjects in the relatively permissive and intolerant cultures of the United States and Italy; and an analysis of menstrual symptoms in both cultures.
Duration: 1956-continuing.
Cooperating group(s): Grant Foundation; Wenner Gren Foundation; Olivetti Corporation; Universities of Florence, Rome, and Palermo.

Publications: *Perceptual and Motor Skills*, 1966, 23, 35-40; *Bulletin of the International Epidemiological Association*, 1965, 12, 1936; *American Journal of Diseases of Children*, 1963, 106, 568-577.

30-AA-3 CHILD HEALTH AND DEVELOPMENT STUDIES

Investigator(s): Jacob Yerushalmy, Ph.D., Professor of Biostatistics, School of Public Health, University of California at Berkeley, Berkeley, California 94720; Stephen Thomas, M.D., Director, Department of Obstetrics and Gynecology; and Edgar Schoen, M.D., Director, Department of Pediatrics, Kaiser Foundation Hospital, Oakland, California 94611.
Purpose: To investigate the relationship of parents' biologic, genetic, and environmental influences (including events during pregnancy, labor, and delivery) to the normal and abnormal development of offspring.
Subjects: Members of the Kaiser Foundation Health Plan (a prepaid medical care program) who reside in the San Francisco-East Bay area.
Methods: Expected byproducts of the investigation are the relationships of factors studied to (1) wasted pregnancies in the forms of early fetal death, perinatal mortality, infant and child mortality; and (2) estimates of the incidence of different types of abnormalities. The study is a prospective, longitudinal type involving both mother and child. Gravidas in the Department of Obstetrics and children in the Pediatric Department are observed, interviewed, and given laboratory examinations. Physicians' observations are systematized uniformly. Special efforts are made to obtain information on members of the study who do not return to the plan for medical care. Detailed growth curves for children, ages birth to 6, and estimates of illnesses and injuries in infancy and the preschool child will be derived on a longitudinal basis.
Duration: July 1959-indefinite.
Cooperating group(s): Permanente Medical Group; Kaiser Foundation Research Institute.
Publications: *Journal of Pediatrics*, August 1967, 71(2), 164-172; *Pediatrics*, 1967, 39, 940-941; *American Journal of Obstetrics and Gynecology*, February 15, 1964, 88(4), 505-518.

30-AA-4 THE BERKELEY, CALIFORNIA GROWTH STUDY

Investigator(s): Dorothy H. Eichorn, Ph.D., Research Psychologist, Institute of Human Development, University of California at Berkeley, Berkeley, California 94720.
Purpose: To study the mental and physical growth of normally healthy persons from birth to the present.
Subjects: 60 full-term, healthy newborns, born in Berkeley hospitals in 1928 to 1929 of white, English-speaking parents; and 140 offspring of these subjects, ages birth to 20, seen irregularly.
Methods: The same data, appropriate for age, were collected for the subjects and their offspring. Beginning in the first week of life, tests of mental and motor development, pediatric examinations, and interviews were conducted at frequent intervals during growth. At all visits, inquiries were made concerning current health and recent illnesses. Anthropometrics, body photographs, and skeletal X-rays were taken at most ages. Socioeconomic data were collected. Studies of the physical aspects of growth include analyses that compare health histories with physical growth and with skeletal maturation. Emotional and other personality variables are being studied for consistency, and in various

interrelations with maternal behavior in infancy, birth histories, socioeconomic status, and intellectual and physical growth.
Duration: 1928-continuing.
Publications: *American Psychologist*, 1968, 23(1), 1-17; *Monograph of the Society for Research in Child Development*, 1963, 28; Bayer, Leona and Bayley, Nancy. *Growth diagnosis: Selected methods for interpreting and predicting physical development from one year to maturity*. Chicago: University of Chicago Press, 1959.

30-AA-5 GROWTH OF PSYCHOPHYSIOLOGICAL PATTERNS IN INFANCY

Investigator(s): Wagner H. Bridger, M.D., Associate Professor of Psychiatry; and Beverly Birns, Ph.D., Assistant Professor of Psychology, Albert Einstein College of Medicine, Yeshiva University, Bronx, New York 10461.
Purpose: To investigate the origins and course of development of individual differences in neonates.
Subjects: Normal, healthy, full-term babies, 2 to 5 days old, born at Bronx Municipal Hospital Center.
Methods: A neonatal behavioral profile, which was established in previous studies, will be used. The profile includes behavioral and heart rate ratings on excitation, soothing, feeding, sleep, and nonstimulus periods of observation. Neonates will be followed at ages 2 weeks, and 1, 2, 3, and 4 months to measure the stability of early appearing traits and their relation to later behaviors. Data will be analyzed with respect to stability of early appearing behaviors and the relationship between neonatal behavior and maternal and birth history.
Duration: 1966-continuing.
Cooperating group(s): National Institute of Mental Health, Public Health Service, U.S. Department of Health, Education, and Welfare.
Publications: In Grant Newton and Seymour Levine (Eds.), *Early experience and behavior: Psychobiology of development*. Springfield, Illinois: Charles C. Thomas, 1968; *Psychosomatic Medicine*, 1966, 28, 316.

30-AA-6 LONGITUDINAL STUDY OF DENTOFACIAL, SKELETAL, PHYSICAL GROWTH, AND NUTRITION OF CHILDREN

Investigator(s): Bhim S. Savara, D.M.D., M.S.; Chairman, Child Study Clinic, Dental School, University of Oregon, Portland, Oregon 97201.
Purpose: To study the dentofacial growth of children, assessment and skeletal age related to facial growth, and variations in physique and its effect on dentofacial growth; and to determine heritable traits.
Subjects: 420 children, including 40 pairs of twins, ages 3 to 18. 300 children have been observed for more than 10 years.
Methods: Cephalograms, hand, wrist, and calf X-rays, intraoral X-rays, study casts, anthropometric measurements, and photographs are taken; and oral examinations are administered to the subjects. Children are examined every 6 months until they are 14 years old.
Duration: 1950-continuing.
Cooperating group(s): University of Oregon Dental School; National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

Publications: *Angle Orthodontist*, 1968, 38, 104-120; *American Journal of Orthodontics*, 1969, 55, 133-153; *American Journal of Physical Anthropology*, 1969, 30(2), 315-318; *Bulletin of the Academy of General Dentistry*, June 1969, 27-31; *Journal of Dentistry for Children*, November-December 1969, 1-4; *American Journal of Orthodontics*, 1970, 57(6), 561-572; *Journal of Dental Research*, 1970, 49(4), 885; *Advances in Oral Biology*. New York: Academic Press, Inc., 1970. Pp. 1-9; *Journal of the American Dental Association*, 1970, 81, 653-661; *Oral Health*, 1971, 61(10), 19-28; *American Journal of Orthodontics*, 1971, 59(5), 488-500; *Symposium on Close-Range Photogrammetry*. Urbana: University of Illinois, 1971. Pp. 365-369.

30-AA-7 NEW RADIOGRAPHIC STANDARDS OF REFERENCE FOR SKELETAL DEVELOPMENT OF CHILDREN AND STANDARDS IN PREPARATION

Investigator(s): S. Idell Pyle, Ph.D., Research Associate in Anatomy, School of Medicine, Case Western Reserve University, Cleveland, Ohio 44106; William W. Greulich, Ph.D., Research Biologist, National Institute of Child Health and Human Development, Bethesda, Maryland 20014; and staff of the National Center for Health Statistics involved in the National Health Survey, Public Health Service, U.S. Department of Health, Education, and Welfare, Washington, D.C. 20201.

Purpose: To develop radiographic standards of reference for skeletal development of children to provide a basis for identifying maturity levels of growing bones in the hands, elbows, shoulders, hips, knees, and feet of children and youths according to the shapes of the bone shadows in an X-ray film.

Subjects: Approximately 1,000 healthy individuals in Cleveland and Boston.

Methods: The bone shadows in an X-ray film display a modal rate of growth of each bone by illustrating regularly occurring osseous features which develop in series in the surface of the bone cortex as it calcifies. A reference standard consists of films arranged as a series to show sequential osseous features which are alike in males and females. It is an instrument for measuring the skeletal maturity level of children. Films of the subjects, covering the full span of growth from birth to adulthood, have been used to prepare standards. A standard of reference for joints in the upper extremity is in preparation, with the section on the hand and wrist showing the application of cardinal maturity indicators of individual bones to handwrist bones which are anomalous in the number of their bone growth centers. For published standards, see Publications below.

Cooperating group(s): Bolton-Brush Growth Study Center, Case Western Reserve University, Cleveland; Department of Maternal and Child Health, Harvard University School of Public Health, Boston; National Center for Health Statistics, Rockville, Maryland; Departments of Pediatrics and Endocrinology, Henry Ford Hospital, Detroit; Merrill-Palmer Institute, Detroit; Department of Education, Eastern Michigan University, Ypsilanti.

Publications: Greulich, W. W. and Pyle, S. I. *A radiographic atlas of skeletal development of the hand and wrist.* (2nd ed.) Stanford, California: Stanford University Press, 1959; Hoerr, N. L.; Pyle, S. I.; and Francis, C. C. *A radiographic atlas of skeletal development of the foot and ankle.* (1st ed.) Springfield, Illinois: Charles C. Thomas, 1962; Pyle, S. I. and Hoerr, N. L. *A standard of reference for the growing knee.* (2nd ed.) Springfield, Illinois: Charles C. Thomas, 1969; Pyle, S. I.; Waterhouse, A. M.; and Greulich, W. W. *A standard of reference for the growing hand and wrist.* (1st ed.) Cleveland: The Press of Case Western Reserve University, 1971.

30-AA-8 METHODS IN CHARACTER DEVELOPMENT

Investigator(s): Ernest M. Ligon, Ph.D., Director; and staff, Union College Character Research Project, 10 Nott Terrace, Schenectady, New York 12308.
Purpose: To develop more effective methods in character development in cooperation with families and character training agencies. (Character is defined in terms of three dimensions: philosophy of values, breadth of social vision, and strength of purpose.)
Subjects: Children and families throughout the United States. The families belong to churches, YMCAs, and schools but participate in the study as individual families.
Methods: Procedures of the research are based on action research, in which the participants cooperate with the laboratory and use methods of coscientist research. Open-ended reports on research goals constitute the basic body of research data. An analysis of these data serves as the basis for the development of new procedures and for the scientific reports that are published concerning it.
Findings: Reports have been prepared concerning hypotheses tested in the home and character building agencies. Most of the findings relate to the home, learning, decision making, and methods for character development, plus descriptions of age level potentials, especially for decision making.
Duration: 1935-continuing.
Cooperating group(s): Lilly Endowment, Inc.
Publications: *A "guide" to the communications of the Character Research Project* (which lists 44 publications and includes a price list) is available from the investigator.

30-AA-9 LONGITUDINAL GROWTH STUDIES OF CHILDREN WITH CRANIOFACIAL BIRTH DEFECTS

Investigator(s): Samuel Pruzansky, D.D.S., Director, Center for Craniofacial Anomalies, Medical Center, University of Illinois, P.O. Box 6998, Chicago, Illinois 60680.
Purpose: To study the epidemiology, genetics, morphology, physiology, and postnatal development; and to plot the natural history of children with craniofacial birth defects.
Subjects: Over 3,000 subjects, males and females, from infancy to adulthood.
Methods: The subjects were initially studied as infants. Procedures included roentgenocephalometry, tomography, dental casts, and photographs. Speech and hearing, psychosocial, and pediatric evaluations supplied additional information.
Findings: Patterns of growth have been delineated that are useful in clinical management. Some conditions have been shown to get worse; some show spontaneous improvement; and others remain unchanged. Syndrome-specific cranial morphologies have been described and genetic significance has been described.
Cooperating group(s): Illinois State Pediatric Institute; Division of Services for Crippled Children, University of Illinois; Cook County Children's Hospital; Division of Research, Maternal and Child Health Services, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare; National Institute of Dental Research, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.
Publications: *Cleft Palate Journal,* 1971, 8, 239. A list of articles in journals of dentistry, medicine, public health, speech and hearing, and psychology is available from the investigator.

30-AA-10 YOUTH REPORTS

Investigator(s): Cecelia E. Sudia, M.A., Research and Evaluation Division, Children's Bureau, Office of Child Development, U.S. Department of Health, Education, and Welfare, P.O. Box 1182, Washington, D.C. 20013.
Purpose: To collect and analyze opinions and values of high school age youths.
Subjects: 250 high school students.
Methods: Students were randomly chosen from youth enrolled in college preparatory courses in high schools selected to cover urban and suburban schools in each of 12 metropolitan areas in the United States. Each student was sent a set of short, open-ended questions and asked to report on the range of opinions in his school or neighborhood group. It is anticipated that the panel will be interviewed in this way two to three times a year. Replies are coded for content; analysis is both quantitative and qualitative.
Findings: The method of mail interview is successful with this group of students, and qualitative reports of opinion add considerable depth and range, as compared to typical polls of student opinions.
Duration: Spring 1969-continuing.
Publications: Teenagers discuss the "generation gap." *Youth Reports No. 1,* U.S. Department of Health, Education, and Welfare, 1969; Youth reporters discuss "problem drugs." *Youth Reports No. 2,* U.S. Department of Health, Education, and Welfare, 1970; Youth reporters discuss legal age restrictions. *Youth Reports No. 3,* U.S. Department of Health, Education, and Welfare, 1971.

30-AA-11 PHILADELPHIA CENTER FOR RESEARCH IN CHILD GROWTH

Investigator(s): Wilton M. Krogman, Ph.D., LL.D., Director, Philadelphia Center for Research in Child Growth; Geoffrey F. Walker, B.D.S., Director, Philadelphia Center for Craniofacial Biology, University of Pennsylvania, Philadelphia, Pennsylvania 19146; and Francis E. Johnston, Ph.D., Department of Anthropology, University of Texas, Austin, Texas 78712.
Purpose: To develop standards and norms of physical growth and development for normal, healthy children in Philadelphia.
Subjects: 300 white boys and 300 white girls; 250 black boys and 250 black girls; ages 6 to 17.
Methods: Cephalometry and somatometry are employed. Measurements are linear, transverse, sagittal, circumferential, skin thickness (via skin calipers), X-ray films of left hand (routinely) and of upper arm or lower leg (reduced number of cases); also of head and face in *norma laterales sinistra* and *norma faciales* (roentgenographic cephalometry). Dental models are taken. Histories secured are (1) familial in terms of ethnic background and socioeconomic status; (2) medical (illness) and dental (occlusion, dental stage, oral habits); and (3) genetic, in terms of the familial occurrence of trait(s) considered. All data may be referred to several age categories: (1) chronological age, (2) dental or eruptive age, and (3) skeletal or biological age. All data have been put on microfilm, coded, and stored in computer memory. (1) *School Series:* initially based on 600 normal, healthy, white 6- to 12-year old school children from five Philadelphia schools (ultimately followed to 22 schools). These children have provided the core data upon which the 7- to 17-year standards are based. (2) *Negro American Series:* based on the semiannual study of 500 elementary school children. These children have provided the core data upon which the 7- to 17-year standards are based. (3) *Orthodontic Series:* now numbers 2,700 children from the Orthodontic Clinics of the University of Pennsylvania (2,000) and the Children's Hospital (500). All of these children have been followed

through their treatment course (2 to 4 years, average). There are posttreatment follow-up studies on about 10 percent of them. (4) *Cleft Palate Series:* in cooperation with the Children's Hospital. These data are single preoperative roentgenographic cephalometric, plus selected somatometry. There are 600 such records and follow-up data on about 10 percent of these children. (5) *Cooley's Anemia Series:* based on 120 children. Measurements, X-ray films, familiogenetic histories were taken, and therapeutic treatment was given. (6) *Endocrine and Chromosomal Series:* Children seen on a referral basis from Children's Hospital.

Duration: 1949-1971.

Cooperating group(s): Children's Hospital of Philadelphia; Philadelphia Board of Education; School System, Archdiocese of Philadelphia; National Institute of Dental Research and National Institute of Child Health and Human Development, Public Health Service, U.S. Department of Health, Education, and Welfare.

Publications: *Monograph of the Society for Research in Child Development,* May 1970, 35(3, Serial No. 136).

30-AA-12 LONGITUDINAL GROWTH STUDY OF GUATEMALAN CHILDREN OF DIFFERENT RACIAL HISTORIES AND SOCIOECONOMIC BACKGROUNDS

Investigator(s): Francis E. Johnston, Ph.D., Professor, Department of Anthropology; Robert M. Malina, Ph.D., Associate Professor, University of Texas, Austin, Texas 78712; and Robert MacVean, Ed.D., Vice-Rector, Universidad del Valle de Guatemala; and Director, American School, Guatemala City, Guatemala.

Purpose: To study the interrelationships between growth measurements and performance measurements in a longitudinal sample of Guatemalan children of different genetic and socioeconomic backgrounds.

Subjects: Approximately 2,000 male and female students, ages 6 to 16, enrolled in two public and two private schools in Guatemala City are examined each year. Children are of Guatemalan, European, and North American backgrounds.

Methods: Subjects are examined each spring. Data gathered include anthropometric measurements, hand-wrist X-rays, results of intelligence and performance tests, and medical examination records. Cross-sectional and longitudinal analyses of data will be performed.

Duration: 1953-1975.

Cooperating group(s): American School, Guatemala City; Universidad del Valle de Guatemala; University of Texas, Austin.

30-AA-13 PROGNOSTIC VALUE OF NEONATAL BEHAVIORAL ASSESSMENTS

Investigator(s): Judy F. Rosenblith, Ph.D., Professor of Psychology, Wheaton College, Norton, Massachusetts 02766; and Associate Member, Institute of Life Sciences, Brown University, Box 1910, Providence, Rhode Island 02912.

Purpose: To determine if standardized behavioral assessment of newborns can be used to identify a population at risk to later neurologically based developmental dysfunction.

Subjects: Approximately 1,750 newborns, 1,550 of whom participate in the Providence Collaborative Perinatal Research Project.

Methods: The Rosenblith modification of the Graham Scale, a behavioral assessment, was used to determine the neurological, muscular, and sensory status of the newborns. Prognostic value of this scale is determined by relating it to criteria obtained in the follow-up assessments of the Collaborative Perinatal Research Project. Replications of the original study based on 400 infants total almost four. Data are now complete through the fourth year psychological examination.

Findings: Newborn measures are related to development at 8 months of age. Specific newborn signs are prognostic of later dysfunction: hypersensitivity to light is indicative of severe neurological damage; unusual patterns of muscle tonicity are related to varying degrees of developmental problems. The newborn assessments could be routinely adapted by hospitals: the equipment costs less than $10; the time required for assessment is less than a 1/2 hour; and the examination procedure can be taught to paraprofessional personnel.

Duration: January 1958-September 1975.

Cooperating group(s): Providence Lying-In Hospital; Child Development Study and Institute of Life Sciences, Brown University.

Publications: *Biologia Neonatorium,* 1970, 15, 217-228; *American Academy of Ophthalmology and Otolaryngology. Transactions,* 1970, 74, 1215-1228; Dubois-Poolsen, Lairy, and Remond (Eds.) La fonction du regard. *Colloque,* 1971, 215-224 (published by Institut National de la Sante et de la Recherche Medicale, Paris).

30-AA-14 COLLABORATIVE STUDIES IN CEREBRAL PALSY AND OTHER NEUROLOGICAL AND SENSORY DISORDERS OF INFANCY AND CHILDHOOD

Investigator(s): Heinz W. Berendes, M.D., National Institute of Neurological Diseases and Stroke, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare, Bethesda, Maryland 20014.

Purpose: To investigate factors and conditions that affect parents: (1) conditions of pregnancy; e.g., infections, trauma, bleeding, drugs, and progress of labor; (2) environmental factors that influence the mother; e.g., social and economic conditions, emotional stress, and medical care, (3) biological factors in parents; e.g., age, parity, medical and reproductive history, and immunologic characteristics; and (4) the genetic background of the parents. To investigate in the offspring: disorders of the nervous system at the time of delivery or disorders that appear during infancy or early childhood, including cerebral palsy, mental subnormality, and behavioral disorders.

Subjects: Approximately 8,000 live births a year from collaborating institutions for 6 years. Offspring are followed until 8 years of age.

Methods: A detailed investigation of the independent variables will be directed towards the reevaluation of the effect of factors already suspected, clarification of the way in which these factors are operative, and the discovery of new factors. Information, from women studied during pregnancy and from their offspring throughout infancy and early childhood, will be collected and analyzed in a uniform way in a number of medical centers throughout the country. Intensive study is made of a limited number of cases; less intensive studies are conducted for as many damaged children and abnormal pregnancies as possible.

Duration: 1956-continuing.

Cooperating group(s): Charity Hospital, New Orleans, Louisiana; Johns Hopkins University, School of Medicine, Baltimore, Maryland; Boston Lying-In Hospital, Children's Medical Center, and Harvard University (Warren Anatomical Museum), Boston, Massachusetts; University of Minnesota Medical School, Minneapolis, Minnesota; Columbia-Presbyterian

Medical Center, New York, New York; Children's Hospital of Buffalo, Buffalo, New York; University of Oregon Medical School, Portland, Oregon; Children's Hospital of Philadelphia and Pennsylvania Hospital, Philadelphia, Pennsylvania; Brown University, Providence, Rhode Island; University of Tennessee Medical School, Memphis, Tennessee; Medical College of Virginia, Richmond, Virginia.

Publications: Chipman, S.S.; Lilienfeld, A.M.; and Donnelly, J.F. (Eds.) *Research methodology and needs in perinatal studies.* Springfield, Illinois: Charles C. Thomas, 1966. Chapters 5 and 6. A bibliography is available from the investigator.

30-AA-15 STUDY OF PERSONALITY DEVELOPMENT BY THE TWIN INTRAPAIR COMPARISON METHOD

Investigator(s): William Pollin, M.D., Chief; Donald Cohen, M.D., Clinical Associate; and Eleanor Dibble, Research Social Worker, Section on Twin and Sibling Studies, Adult Psychiatry Branch, National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare, Bethesda, Maryland 20014.

Purpose: To understand the contributions of genetic, constitutional, and environmental factors to social, emotional, and cognitive development during the first years of life; specifically, to explicate the factors that underlie the emergence of individuality, using twins and triplets as subjects.

Subjects: Twins and triplets, from the prenatal period through elementary school age.

Methods: The central methodological principle emphasizes the effort to define precisely developmental difference within infant and childhood MZ twin pairs, and then search for the determinants of such differences. In the longitudinal study, parents are interviewed as soon as the diagnosis of a twin pregnancy is made. Neurological, pediatric, and developmental assessments are performed at birth and at 3- to 6-month intervals during the first years of life. The parents are interviewed at the same intervals about the children's development and family history. In the preschool period, the children receive standardized psychological testing, are observed in a standardized nursery school setting, and are administered projective psychological testing. Children and families are visited at home and also seen in structured office settings. In cross-sectional studies, children are seen for developmental evaluation, psychological assessment, and observations of free play, and their parents are interviewed. The value of questionnaire techniques is being investigated. A general research question relates to the way in which constitutional differences in the children elicit different types of parenting, and the ways in which differential parental behavior shapes the emergence of personality differences in the children.

Duration: 1967-1980.

30-AA-16 PREVENTIVELY ORIENTED SCHOOL MENTAL HEALTH PROGRAMS

Investigator(s): Emory L. Cowen, Ph.D., Professor, Department of Psychology, and Director; D. A. Dorr, Ph.D., Research Coordinator; L. D. Izzo, M.A., Chief Psychologist; and M.A. Trost, M.A., Chief Social Worker, Primary Mental Health Project, University of Rochester, River Campus Station, Rochester, New York 14627.

Purpose: To detect and prevent school maladaptation.

Subjects: 7,500 school children including 4,500 primary children in 11 preventively oriented school mental health programs.

Methods: Current research which originated in 1958 (see *Research Relating to Children*, Study 19-SS-7), includes 23 studies on training nonprofessionals, evaluation of programs, process analyses, selection-process relations, selection-outcome relations, and process-outcome relations. Between 20 and 30 different research instruments and assessment procedures are being used.
Duration: February 1969-continuing.
Cooperating group(s): University of Rochester.

30-AA-17 LANGUAGE ACQUISITION IN THE CONTEXT OF THE DEVELOPMENT OF BEHAVIOR AND INTERACTION

Investigator(s): Margaret Bullowa, M.D., Researcher, Speech Communication Group, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139.
Purpose: To find the steps by which early stages of the child's language development take place.
Subjects: Four firstborn children from white, English-speaking, middle class families.
Methods: Each child was observed from birth for at least 30 months at home at weekly intervals. On each visit a half hour continuous record was made on tape and film. An observer using a shielded microphone dictated a simultaneous description of ongoing behavior and interaction to supplement the film taken by a robot camera. A timing signal was placed on the tape and film every 5 seconds. (The tape and film from an observation may be synchronized during playback in the laboratory.) In addition, an independent team that consisted of a pediatrician and a developmental psychologist visited each baby's home once a month to assess other aspects of maturation and development. Indexes to sound and transcripts were made from the tapes to permit rapid search. Tapes are analyzed by linguists interested in phonological, semantic and syntactic features. Synchronized tape and film is studied by linguists and by the principal investigator, who is interested in the communicative behavior of which the vocalization forms a part.
Findings: The most significant finding is the apparent obligatory relationship between the child's vocal sound production and actions with the same meaning in early *performative sentences*. Such sentences are used by the child to communicate messages when he is showing something to someone, when he is greeting someone, etc. Another finding is the spontaneous appearance of sentences with topic-comment construction in the child's speech even though parents rarely use this construction. (The construction is not characteristic of adult American English.)
Duration: Pilot study, 1959-1965; present study, 1965-continuing.
Cooperating group(s): National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.
Publications: *Journal of Child Psychiatry*, 1964, III(1), 53; *Monographs of the Society for Research in Child Development*, 1964, 29(1), 101-114; *Language and Speech*, 1964, 7(2), 107-111; *Quarterly Progress Report of the Research Laboratory of Electronics*, 1966, 81, 181-186; *Lingua*, 1967, 19(1), 1-59; *Foundations of Language*, 1967, 1, 37-65; Reibel, D. A. and Schane, S. A. (Eds.) *Modern studies in English*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969. Pp. 422-447; Bar-Adon, A. and Leopold, W. F. (Eds.) *Child language: A book of readings*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971; *Journal of the American Academy of Child Psychiatry*, 1971, 10(1), 124-135; *Quarterly Progress Report of the Research Laboratory of Electronics*, M.I.T., 1971, No. 100.

30-AA-18 THE HARVARD PRESCHOOL PROJECT

Investigator(s): Burton L. White, Ph.D., Director; Jean Watts, Ph.D., Co-director; and Barbara Kaban, M.A., The Harvard Preschool Project, Laboratory of Human Development, Graduate School of Education, Harvard University, 418 Larsen Hall, Appian Way, Cambridge, Massachusetts 02138.

Purpose: To trace the development of educability and competence in children during the first 6 years of life, and simultaneously to trace the role of experience in such development.

Subjects: Presently, 32 normal children, ages 12 to 32 months, of both sexes, half of whom were selected because they exhibited potentials to develop high degrees of general competence during the second and third years of life; while the other children seemed likely to develop a considerably lower level of competence.

Methods: The work in progress constitutes a longitudinal natural experiment. Data are collected by home observation and testing of the children on the average of 2 hours per week. One observational technique consists of tape recordings in which the observer describes the child's activities. The data are then coded onto forms using instruments developed for the project. Another technique involves a checklist record of behavior. Tests of language and cognitive development are administered regularly. Factors, including stream of experience, the child's competencies, and salient environmental influences, are measured.

Findings: Analysis of preliminary data indicates that the observation instruments are monitoring the development of competence in promising ways. Further indications of how childrearing practices influence the process are becoming clear. The mother or substitute, usually through indirect action, is seen as the major environmental influence on the development of competence. A longitudinal experiment will be initiated this year. (See *Research Relating to Children, Bulletin 22,* May-December 1967, Study 22-DA-3, p. 16.)

Duration: September 1965-continuing.

Cooperating group(s): U. S. Office of Economic Opportunity; Carnegie Corporation, New York; Head Start, Office of Child Development, U. S. Department of Health, Education, and Welfare.

30-AA-19 LEARNING OF INCENTIVE VALUE IN CHILDREN

Investigator(s): Jum C. Nunnally, Ph.D., Professor, Department of Psychology, Vanderbilt University, Nashville, Tennessee 37203.

Purpose: To study the learning of incentive value in children through the use of reward conditioning.

Subjects: Elementary school children, ages 7 to 11.

Methods: Neutral objects (usually nonsense syllables) are associated with receipt of reward, nonreward, and loss of reward in various types of research designs. The amounts and kinds of condition reward value are measured in relation to verbal evaluation, reward expectancy, choice behavior, and measures of selective attention.

Findings: Various consistent effects have been found on the dependent measures, and the research paradigms have been able to differentiate many treatment conditions concerned with secondary rewards.

Duration: 1963-continuing.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: Rileigh, K. K. and Nunnally, J. C. A new measure of semantic appraisal for studies of secondary rewards. *Psychonomic Science,* 1970, 18, 203-205; Wilson, W. H. and Nunnally, J. C. A naturalistic investigation of acquired meaning in children. *Psychonomic Science,* 1971, 23, 149-150.

GROWTH AND DEVELOPMENT

General

30-BA-1 THE EFFECTS OF CIRCUMSTANCES OF PREGNANCY AND BIRTH ON SUBSEQUENT DEVELOPMENT

Investigator(s): Pearl L. Rosser, M.D., Medical Director; Mitzi A. Parks, M.Ed., Child Development Specialist; and Joyce W. Moss, B.A., Graduate Student, Child Development Center, Department of Pediatrics and Child Health, College of Medicine, Howard University, Washington, D.C. 20001.
Purpose: To review the clinical records of a child development center in order to determine the relationships that exist, if any, between circumstances of birth noted on the hospital delivery record and the subsequent development of the child.
Subjects: 359 Caucasian and Black boys and girls with known developmental disorders, ages 11 months to 13 years.
Methods: Clinical records from 1965 to 1971 of the Child Development Center of the Howard University College of Medicine were reviewed. A checklist and tables were developed to record reported diagnoses and reproductive abnormalities. Birth records were obtained and reviewed, and the frequency of the abnormal circumstances of pregnancy were tabulated. The association between stressful situations of pregnancy and developmental disorders was measured by a chi-square test of independence.
Duration: July 1971-January 1972.

30-BA-2 STUDIES IN CHILD GROWTH AND DEVELOPMENT

Investigator(s): J. A. Birkbeck, M.B., Assistant Professor, Department of Pediatrics and Human Nutrition, University of British Columbia, Vancouver 8, British Columbia, Canada.
Purpose: To examine the factors that affect patterns of physical growth and development in children, particularly the factors that may be responsible for controlling rates of growth.
Subjects: Approximately 200 girls, ages 9 to 18, of Oriental origin; approximately 30 blind and partially sighted children; and a group of children from the Vancouver school population, used as control subjects.
Methods: Socioeconomic and menarchial data were collected by questionnaire. Data were also gathered on the individual's height, weight, skeletal maturity (by means of hand and wrist X-rays), and bone structure. The girl's age at menarche was determined by logistic analysis. Genetic factors are studied to determine to what extent environmental factors, especially nutrition, are relevant.
Duration: 1971-1973.
Cooperating group(s): Canadian Medical Research Council.

Physical

30-CA-1 INFLUENCE OF AGE ON ASPECTS OF THE CEREBRAL CIRCULATION

Investigator(s): J. W. Lovett Doust, M.D., Professor, Department of Psychiatry, University of Toronto, 250 College Street, Toronto, Ontario, Canada.
Purpose: To study the influence of age on aspects of the cerebral circulation.
Subjects: 28 healthy boys and girls, ages 6 to 18, within a larger sample of 200 healthy individuals, ages 6 to 70.
Methods: A survey by cerebral impedance plethysmography was conducted on all the subjects. The survey employed a *rheo-2* monopolar rheoencephalograph, an FM tape recording, and a Linc-8 computer program. An extension of the investigation will include the use of hand measurements from Grass polygraph ink recordings.
Findings: Results indicate a decline in cerebrovascular efficiency as age advances by decades.
Duration: January 1971-March 1974.
Cooperating group(s): Ontario Mental Health Foundation; Computer Section, Clark Institute of Psychiatry, Toronto.

30-CB-1 ETIOLOGY AND CONSEQUENCES OF LOW BIRTH WEIGHT

Investigator(s): R. G. Mitchell, M.D., Professor, Department of Child Health; I. McGillivray, M.D., Professor, Department of Obstetrics, Medical School; and Raymond Illsley, Ph.D., Professor, Department of Sociology, University of Aberdeen, Foresterhill, Aberdeen, AB9 2ZD, Scotland.
Purpose: To observe and record perinatal neurological and biochemical data and to study environmental influences on neonates.
Subjects: 296 legitimate, singleton infants, who weighed 2,500 grams or less at birth, born in Aberdeen, Scotland in 1969 and 1970; and a group of matched controls.
Methods: The control infants weighing over 2,500 grams at birth were matched for sex, ordinal position in the family, maternal height and smoking history, and paternal occupation. A close sociological study will be made of a sample of 74 cases. (See *Research Relating to Children, Bulletin 28,* 1971, 52.)
Duration: 1968-1973.

30-CC-1 SHORT-TERM HABITUATION IN INFANTS: A COMPARISON OF AVERAGED ELECTROENCEPHALIC RESPONSES TO CONSTANT AND PATTERNED STIMULI

Investigator(s): Bruce A. Weber, Ph.D., Research Audiologist, Child Development and Mental Retardation Center, University of Washington, Seattle, Washington 98195.
Purpose: To determine whether infants are selectively tuned to speech-like stimuli. It was hypothesized that the stimulus most like speech would show the least short-term habituation of the averaged electroencephalic response (AER).
Subjects: Eight boys and seven girls, ages 14 to 18 weeks.
Methods: In each of two experiments, a single train of stimuli consisting of alternations of a series of nine buzzes and nine tone pulses was used. Test sessions were terminated

after 288 presentations of each stimulus. Stimulus by stimulus AERs were obtained by averaging the 32 repetitions of the nine presentations of each stimulus. Amplitude was defined as the distance to the maximum negativity point (occurring around 300 msec after stimulus onset).

Findings: Contrary to expectations no short-term habituation was observed for any stimulus. Marked amplitude differences were noted when the stimuli had dissimilar power spectra. The results are interpreted as suggesting that short-term AER habituation is not present at birth. Power spectrum is important in an infant's selective tuning.

Duration: June 1971-February 1972.

Cooperating group(s): National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-CC-2 AUDITORY BEHAVIOR IN HUMAN NEONATES

Investigator(s): Rita B. Eisenberg, Sc.D., Director, Bioacoustic Laboratory; and David Baird Coursin, M.D., Director, Research Institute, St. Joseph Hospital, Lancaster, Pennsylvania 17604.

Purpose: To determine whether auditory specializations required for language perception later in life are present, in the form of differential auditory behavior, during the newborn period.

Subjects: Three risk categories of newborns and a matched number of controls, in selected infant and adult age groups.

Methods: Correlative data are being collected on behavioral, heart rate, and electroencephalographic (EEG) responses to a synthetic vowel (a) and a matched-spectrum tonal pattern presented under identical conditions. Behavioral data will be classified by methods already detailed in the investigators' previous publications (see Publications below). Heart rate will be subjected to computer analysis using convex envelope techniques to establish probability of response and time series techniques to establish wave form characteristics. Evoked potential data will be analyzed in various ways.

Findings: Preliminary data indicate that synthetic vowels are coded at fairly high levels in the n. VIII system. EEG pattern evoked appears to be highly specific in central and temporal leads during infancy and on all three leads during adult life.

Duration: June 1968-May 1973.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Eisenberg, R. B. The development of hearing in man: An assessment of current status. *American Speech and Hearing Association,* 1970, 12, 119-123; Eisenberg, R. B. Organization of auditory behavior. *Journal of Speech and Hearing Research,* 1970, 13, 453-471.

30-CF-1 MEASURED DOSES OF FLUORIDE FROM BIRTH TO AGE 4

Investigator(s): Frederick J. Margolis, M.D., Assistant Professor, College of Medicine, Wayne State University, Kalamazoo, Michigan 49008.

Purpose: To determine the effects of the intake of measured fluoride, no fluoride, and fluoride water on dental caries and resulting missing teeth in children.

Subjects: 1,600 children studied from birth onward or from age 4 onward.

Methods: Children will be studied who receive measured doses of fluoride, no fluoride, or fluoride water, either from birth, or beginning at age 4.
Findings: Fluoride intake markedly reduces the incidence of dental caries, and is most effective if started from infancy with measured doses.
Duration: 1961-1971.
Cooperating group(s): School of Public Health, University of Michigan; Chemistry Department, Western Michigan University.

30-CF-2 FIELD TRIP FOR A DENTAL ADHESIVE SEALANT MATERIAL

Investigator(s): Norman O. Harris, D.D.S., M.S.D., Director of Research, School of Dentistry, University of Puerto Rico, Ponce De Leon, San Juan, Puerto Rico 00905; and Lucien Moolenaar, D.D.S., M.P.H., Director, Dental Health Services, Department of Health of Virgin Islands, Charlotte Amalie, Virgin Islands 00801.
Purpose: To determine the effectiveness and longevity of a plastic sealant to reduce the incidence of dental caries.
Subjects: Approximately 2,000 children, grades 1 to 3, living in the Virgin Islands.
Methods: Each child is given an examination, and his contralateral posterior teeth are selected to be sealed with a methyl methacrylate adhesive sealant. At the end of 6 months, and at 6-month intervals, the children will be examined for dental caries and sealant retention.
Duration: December 1970-December 1973.
Cooperating group(s): School System of the Virgin Islands; National Institute of Dental Research, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-CF-3 DENTAL HEALTH CARE MODELS OF SOUTHWEST CULTURES

Investigator(s): Timothy J. Pettibone, Ed.D., Assistant Professor, Educational Research Center, New Mexico State University, Box 3R, Las Cruces, New Mexico 88001.
Purpose: To develop and cross-validate cultural models of dental health care practices.
Subjects: Approximately 600 rural and urban families with one child in grades 1 to 6, from Chicano, American Indian, and Anglo backgrounds, studied over a 2-year period.
Methods: The elementary school child and his mother will constitute the observational units. Two types of data will be collected: (1) indices of dental health status will be obtained during specially arranged clinical sessions, and (2) data on sociological, psychological, and demographic factors will be obtained through interviews. Statistical techniques will include linkage or factor analyses, discriminant analysis, path analysis, and multiple regression analysis. After the models have been developed, they will be cross-validated with new data collected either from the same or similar areas.
Duration: October 1971-September 1973.
Cooperating group(s): Dental Health Division, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-CG-1 THE EFFECTS OF DIFFERENTIATED INSTRUCTION IN VISUO-MOTOR SKILLS ON DEVELOPMENTAL GROWTH AND READING READINESS AT KINDERGARTEN LEVEL

Investigator(s): Inga Kromann Kelly, Ph.D., Associate Professor, Department of Education, Washington State University, Pullman, Washington 99163.
Purpose: To determine if kindergarten reading readiness is enhanced by differentiated instruction in visuo-motor skills, to determine if the Gesell Developmental Placement Examination (GDPE) is effective for interclass groupings, to determine if developmental growth can be accelerated by instruction in visuo-motor skills, and to determine what materials and media are appropriate for kindergarten instruction.
Subjects: 132 kindergarten children, 71 girls and 61 boys, ages 5 and 6.
Methods: Subjects were assigned by means of stratified random sampling to experimental and control high, low, and heterogeneous developmental level classrooms as determined by scores on the GDPE. Differential instruction in visuo-motor skills was administered for 8 months using manipulative perceptual materials and programs, fine motor perceptual programs, and self-instructional slide-tape kits to teach copy forms. Analyses of variance and covariance were employed to test for significant differences among groups on developmental growth measured by GDPE and on reading readiness measured by Gates-MacGinitie Reading Skills Test.
Findings: Although scores tended to favor the experimental groups at the high and heterogeneous developmental levels, no significant differences were found between experimental and control groups on reading readiness or developmental growth. Significant differences favored experimental high and heterogeneous classes on divided rectangle copy form. High and heterogeneous classes in both experimental and control groups showed significantly higher reading means when adjusted for developmental age than did low groups.
Duration: August 1970-August 1971.
Cooperating group(s): National Center for Educational Research and Development, Office of Education, U. S. Department of Health, Education, and Welfare; Pullman Public Schools, Washington.

30-CG-2 PROJECT IMAGE (INDIVIDUAL MOTOR ACHIEVEMENT IN GUIDED EDUCATION)

Investigator(s): George E. DeHaven, B.S., Consultant Physical Therapist; and James D. Bruce, M.S., Director of Research, Dando Villa, The Devereux Foundation, Devon, Pennsylvania 19333.
Purpose: To establish normative data and standard scores of the Devereux Test of Extremity Coordination (DTEC).
Subjects: 1,000 normal children, ages 3 to 10.
Methods: The data will be analyzed to determine the strength of subtests, the developmental aspects of the total score, and the relationship of interrater reliability.
Findings: Interrater reliability coefficients were computed on total score and found to be .9997.
Duration: September 1971-June 1972.
Cooperating group(s): Tredyffrin-Easttown School District, Chester County, Pennsylvania; Eight private nursery schools in Chester, Delaware, and Montgomery Counties, Pennsylvania.

30-CG-3 REFLEX AND MOTOR ORGANIZATION IN CHILDREN WITH LEARNING DISABILITIES

Investigator(s): David Freides, Ph.D., Associate Professor, Department of Psychology, and Johanna Barbati, O.T.R., Assistant Professor, Department of Physical Therapy, Emory University, Atlanta, Georgia 30322.
Purpose: To determine what kinds of motor organization impairments, if any, occur in children with learning disabilities.
Subjects: 12 boys with learning disabilities, ages 7 to 9, randomly chosen from a program that requires normal IQ and the absence of neurological impairment; and a control group of 12 normal children from the same school, matched for age, sex, and socioeconomic status.
Methods: Examiners, who are not aware of the children's status, will observe the children by videotape, particularly their reflex activity (i.e., labyrinthine or tonic neck reflexes) and complex motor skills (hopping to the right on the left foot).
Findings: Preliminary findings reveal a surprisingly high proportion of children with motor deficiencies.
Duration: November 1971-August 1972.

30-CH-1 SPEECH RATE IN CHILD LANGUAGE

Investigator(s): David McNeill, Ph.D., Professor, Department of Psychology and Department of Linguistics, University of Chicago, Chicago, Illinois 60637.
Purpose: To determine what developmental changes occur, if any, in an individual's rate of speech, when the rate is measured in various units of spontaneous speech.
Subjects: Individuals, ages 1-1/2 to 30; most subjects are preschool children.
Methods: The subject's spontaneous speech is recorded, transcribed, and analyzed into various linguistic units including: syllables, morphemes, words, surface phrases, and underlying propositions. The speech units are timed through a semiautomatic procedure. The average duration of each linguistic unit is then computed for large samples of utterances (700 to 1,000).
Findings: The amount of time to produce an underlying proposition appears to be a developmental constant. It is produced in about 2 seconds, regardless of age.
Duration: January 1970-June 1972.

30-CH-2 AN EXPLORATORY INVESTIGATION OF SENTENCE-LIKE UTTERANCES OF FIRST LANGUAGE LEARNERS

Investigator(s): Richard Blasdell, Ph.D., Assistant Professor, Department of Speech Pathology and Audiology, University of Iowa, Iowa City, Iowa 52240.
Purpose: To investigate prelinguistic polysyllabic utterances of young normal children, especially their intonation contours.
Subjects: 5 boys and 5 girls, ages 16 to 26 months (children of university students who are native speakers of English). The subjects are members of mixed sibling constellations.
Methods: The children's spontaneous utterances are recorded in 1-hour sessions conducted in the laboratory and the home. The utterances are segmented and labelled according to the mothers' accompanying utterances. An attempt is made to assign functional labels to the children's utterances. Acoustic analyses are being accomplished primarily by Sonagraphic methods.
Duration: February 1971-July 1972.

30-CH-3 THE ACQUISITION OF SEMANTIC DISTINCTIONS IN CHILDREN'S SPEECH

Investigator(s): Eve V. Clark, Ph.D., Assistant Professor, Department of Linguistics, Stanford University, Stanford, California 94305.
Purpose: To study the child's attaching meaning to words within particular semantic fields, the order of acquisition, and consistency across children.
Subjects: 10 children, ages 1-1/2 to 5 years, studied each 6-month period, who are native speakers of English.
Methods: Taped interviews will be conducted with each child, and the child's knowledge about the meanings of particular words at different ages will be tested. A longitudinal follow-up will be made on the children in the younger age groups.
Duration: September 1971-August 1973.
Cooperating group(s): National Science Foundation.

Intellectual

30-DB-1 COGNITIVE DEVELOPMENT AND CONCEPTUAL BEHAVIOR

Investigator(s): Howard H. Kendler, Ph.D., Professor; and Tracy S. Kendler, Ph.D., Professor, Department of Psychology, University of California at Santa Barbara, Santa Barbara, California 93106.
Purpose: To extend and expand the coordinated single unit and mediational S-R formulation of intellectual development, particularly as it relates to conceptual behavior.
Subjects: Individuals ranging from preschool to college age.
Methods: Discrimination shift studies and conceptual tasks will be the primary methods employed.
Findings: Ontogenic changes in discrimination shift studies reflect a transition from a single-unit mechanism, in which responses are under the direct control of external stimulation; to a mediational mechanism, in which behavior is controlled by self-generated symbolic cues that represent conceptual categories.
Duration: September 1970-August 1972.
Publications: Kendler, H. H. Environmental and cognitive control of behavior. *American Psychologist*, 1971, 26(11), 962-973.

30-DB-2 COGNITIVE DEVELOPMENT IN CHILDREN WITH BRAIN DAMAGE

Investigator(s): Morton Bortner, Ph.D., Professor, Department of Special Education, Ferkauf Graduate School, Yeshiva University, 55 Fifth Avenue, New York, New York 10003.
Purpose: To describe the growth and development of intellectual abilities in relation to other relevant functions in brain damaged school children.
Subjects: 210 brain damaged boys and girls, ages 6 to 12.
Methods: A longitudinal 4-year study will be conducted on the subjects in the areas of intelligence, achievement, neurological status, perceptual status, language status, and health status.
Duration: 1968-1972.
Publications: Bortner, M. and Birch, H. G. Cognitive capacity and cognitive competence. *American Journal of Mental Deficiency*, 1970, 74, 735-744; Bortner, M. Phrenology, localization, and learning disabilities. *Journal of Special Education*, 1971, 5, 23-29.

30-DB-3 PIAGETIAN PATTERNS OF COGNITIVE DEVELOPMENT IN NORMAL AND IN EMOTIONALLY DISTURBED CHILDREN

Investigator(s): Anne Filer, Graduate Student, Department of Psychology, University of Rochester, Rochester, New York 14627.
Purpose: To compare intercorrelations among cognitive and cognitive-interpersonal developmental skills in normal and emotionally disturbed children.
Subjects: Emotionally disturbed children, ages 6 to 13, matched with normal children by sex, race, socioeconomic status, and either chronological or mental age.
Methods: Semiclinical interviews were conducted with each child during two 45-minute sessions. A battery of seven tests was given to each child, including a classical Piagetian conservation task, a cartoon test of social egocentrism, a Piagetian inventory, a test of psychological causality, a role taking task, and the Peabody Picture Vocabulary Test.
Duration: June 1971-June 1972.
Cooperating group(s): Convalescent Hospital for Children, Rochester, New York; East Rochester Public Schools.

30-DB-4 NURSERY SCHOOL PROJECT

Investigator(s): K. G. Stukat, Professor and Scientific Leader; and Karl-Axel Sverud, Ph.M., Project Leader, Pedagogiska Institutionen, Lararhogskolan i Goteborg, Ovre Husargatan 34, S-413 14 Goteborg, Sweden.
Purpose: To develop a goal directed and moderately structured method-material program for preschool children in the areas of social, communication, and concept training.
Subjects: Approximately 900 preschool children, age 6, in 24 experimental and 24 control classes.
Methods: All the children are tested on a number of cognitive and social variables at the beginning and at the end of the school year. During one phase of the project, systematic observations will be recorded of typical instruction and activity situations. Data will also be collected on the children's attitude towards the nursery school, the experimental material, and school.
Duration: 1968-1972.

30-DB-5 ANALYSIS OF COGNITIVE BEHAVIOR IN CHILDREN

Investigator(s): Klaus G. Witz, Ph.D., Associate Professor, Department of Mathematics; and J. A. Easley, Jr., Ph.D., Professor, Department of Elementary Education, University of Illinois, Urbana, Illinois 61801.
Purpose: To describe as accurately as possible how children think in concrete situations, and to discover what kinds of cognitive structures and processes best account for children's behavior.
Subjects: Approximately 12 to 20 children in each age range: 2 to 3, 4 to 5, 6 to 11, and 12 to 13. The children were not systematically selected, but they tend to be more verbal than average in the presence of adults.
Methods: Relatively unstructured clinical interviews were conducted using simple physical apparatus as the subject matter of the conversation. Protocols were analyzed to identify and refine descriptions of structures which account for as much of the data as possible. Videotape recording was used in most cases. Other protocols were obtained

from videotapes of children engaged in free play interactions which were analyzed by similar methods. Structures were sought that dominate or control behavior for periods of time from seconds to minutes.

Findings: In the area of physical knowledge, which Piaget distinguishes from logico-mathematical operations and social knowledge, three new types of structures have been found and named: *frameworks, activity structures* (identified in 3- to 5-year-olds), and *physical deep structure fields* (identified in 12-year-olds). *Cycles* and *sequences* are *major units* found in free play among 3-year-olds.

Duration: February 1970-January 1972.

Cooperating group(s): Child Development Laboratory, University of Illinois; Curriculum Laboratory, University of Illinois; University High School, Urbana, Illinois; Urbana Public Schools; Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: Witz, K. G. Representations of cognitive processes and cognitive structure in children. *Archives de Psychologie*, 1971, 15, 61-95; Witz, K. G. Activity structures in four year olds. In J. Scandura (Ed.), *Research in Structural Learning II*. New York: Gordon and Breach, 1972; Witz, K. G. and Easley, Jr., J. A. Cognitive deep structure and science teaching. Presented at a conference at the Centre de Recherche en Didactique, University of Quebec at Montreal, October 18-23, 1971; Easley, Jr., J.A. and Witz, K. G. Individualized instruction—Some observations from the ivory tower. *Instructional Technology*, 1972 (in press); Knifong, J. D. The representation of cognitive structures in four and a half year olds. Doctoral dissertation, University of Illinois.

30-DC-1 INDIVIDUAL DIFFERENCES IN DISCRIMINATION SHIFTS

Investigator(s): J. Dennis Nolan, Ph.D., Associate Professor; and Donald B. Smith, M.A., Department of Psychology, Ohio State University, 1945 North High Street, Columbus, Ohio 43210.

Purpose: To evaluate children's different kinds of mediational responses under various conditions.

Subjects: Boys and girls, ages 3 to 18, from various socioeconomic backgrounds.

Methods: The study involves successive intradimensional and extradimensional shifts in the presence of varying amounts of irrelevant information. The correlates of shift abilities are evaluated.

Duration: June 1971-June 1972.

Cooperating group(s): Columbus Public Schools; Ohio Wesleyan University Preschool; Ascension Preschool; Urbancrest Head Start Program.

30-DC-2 EDUCATIONAL AND BEHAVIORAL SEQUELAE OF PRENATAL AND PERINATAL CONDITIONS

Investigator(s): Rosalyn A. Rubin, Ph.D., Associate Professor, Department of Educational Psychology and Department of Special Education; and Maynard C. Reynolds, Ph.D., Chairman, Department of Special Education, University of Minnesota, Minneapolis, Minnesota 55455; and John A. Anderson, M.D., Ph.D., Head, Department of Pediatrics, University of Minnesota Hospitals, University of Minnesota, Minneapolis, Minnesota 55455.

Purpose: To assess the relationships of prenatal and perinatal conditions to subsequent children's problems of learning and behavior in school.

Subjects: Approximately 1,600 children, ages 6 to 10, in grades 1 to 6. Mothers of the subjects received prenatal care and delivered the children at the University of Minnesota Hospitals as participants in the Collaborative Perinatal Research Project.
Methods: The Collaborative Perinatal Research Project is a major investigation in 12 medical centers of the antecedents of neurologically related childhood disorders. Subjects were selected in a prospective longitudinal research design. Perinatal medical data as well as periodic physical and psychological examination data are available through the project. Data were collected on school readiness and language development of children, ages 5 and 6. Data will be collected on school placement, progress, and behavior on an annual basis with individual achievement testing at age 9. Multiple regression and analysis of variance techniques have been the primary statistical treatments of the data.
Duration: May 1966-continuing.
Cooperating group(s): Collaborative Perinatal Research Project, University of Minnesota Hospitals.
Publications: Learning and behavior disorders: A longitudinal study. *Exceptional Children,* December 1971, 38, 293-299; Sex differences in effects of kindergarten attendance on development of school readiness and language skills. *Elementary School Journal,* February 1972.

30-DC-3 SPEECH AND COGNITIVE LEARNING IN YOUNG CHILDREN

Investigator(s): Larry Wilder, Ph.D., Principal Investigator, Wisconsin Research and Development Center for Cognitive Learning, 1404 Regent Street, Madison, Wisconsin 53706.
Purpose: To examine the relationship between the child's overt speech behavior and his cognitive development, and to examine the development and rate of implicit speech.
Subjects: Over 600 children in nursery school through grade 6.
Methods: Verbal learning paradigms are being used. The critical variables are age and pronunciation.
Findings: It was found that overt verbal responses are particularly useful for visual discrimination learning tasks, and such overt responses are unnecessary in older children and adults.
Duration: 1969-1973.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-DC-4 THE LEARNING BOOTH: PRELIMINARY ANALYSIS OF RESEARCH ACTIVITIES

Investigator(s): Nicholas Rayder, Ph.D., Director of Evaluation, Far West Laboratory for Educational Research and Development, 1 Garden Circle, Hotel Claremont, Berkeley, California 94705.
Purpose: To investigate the relationship of (1) children's performance in the Learning Booth and their reading ability and (2) Learning Booth performance and scores on an intelligence test.
Subjects: 65 children in grade 1 and 36 children in kindergarten.
Methods: Scores on the Cooperative Primary Reading Test were obtained for children who had available Learning Booth performance data. The data will be analyzed by a multiple regression model. Their scores on four subtests of the Wechsler Preschool

and Primary Scale of Intelligence (WPPSI) and Learning Booth performance data were analyzed by product-moment correlation.
Findings: Learning Booth experience accounted for about 13 percent of the reading scores over and above intelligence test scores taken at the end of the first grade. The correlation between WPPSI scores and time spent in the booth was .14. The correlation between WPPSI scores and the final phase completed was also negligible.
Duration: September 1970-January 1972.

30-DC-5 ATTENTION AND PREFERENCE: IMPLICATIONS FOR LEARNING AND TRANSFER

Investigator(s): R. B. May, Ph.D., Associate Professor, Department of Psychology, University of Victoria, Victoria, British Columbia, Canada.
Purpose: To assess the determinants of stimulus preference and how they affect children's learning.
Subjects: 150 to 200 white, middle class boys and girls each year, ages 4 to 10.
Methods: The study involves a factorial design with two to five treatments administered to an equal number of boys and girls in at least two discrete age-grade levels. The children are tested individually on some form of discrimination task. The tasks include discrimination of letter-like figures (Gibson graphemes), reversal/nonreversal discrimination shifts, size discrimination, and concept identification. The training typically proceeds until a criterion of perfect performance is met. The number of trials taken to solve the problem and the number of errors made are then submitted to multivariate analysis of variance.
Duration: April 1969-March 1974.
Cooperating group(s): National Research Council of Canada.
Publications: Size discrimination in children facilitated by changes in task difficulty. *Journal of Comparative and Physiological Psychology*, 1971, 75, 453-458.

30-DD-1 RELATIONSHIPS BETWEEN THE PEABODY PICTURE VOCABULARY TEST AND THE STANFORD-BINET INTELLIGENCE SCALE

Investigator(s): Gerald Groden, Ph.D., Psychologist; Sandra Welles, B.A.; Paula Meinel, B.A.; and Donna Holden, B.A., Assistants, Child Development Center, Rhode Island Hospital, Providence, Rhode Island 02903.
Purpose: To determine the relationships that exist between the Peabody Picture Vocabulary Test (PPVT) and the Stanford-Binet Intelligence Scale (SB) when they are used to test young children.
Subjects: 200 boys and girls, ages 4 to 8, who are outpatients at a child development clinic.
Methods: Data are being collected on the children as part of a multidisciplinary evaluation. Mean scores on the PPVT and SB will be compared, and significant differences will be evaluated by t-test.
Duration: January 1967-January 1972.

30-DD-2 TESTS FOR THE EARLY DETECTION OF SCHOOL FAILURE

Investigator(s): O. Spreen, Ph.D., Professor, Department of Psychology, University of Victoria, Victoria, British Columbia, Canada.
Purpose: To devise tests for the detection of learning problems among kindergarten children.
Subjects: 384 boys and girls, age 5; the complete population of School District 63 in Canada.
Methods: Six tests were given at the kindergarten level, and a reliability study was made of two tests. A follow-up study was conducted to grade 3 for all children with respect to testing, achievement tests, and teacher ratings.
Findings: Preliminary results indicate high test validity.
Duration: 1969-1973.

30-DD-3 INTELLECTUAL PERFORMANCE OF ARABIAN VILLAGE CHILDREN

Investigator(s): A. Lieblich, Ph.D., Lecturer; S. Kugelmass, Ph.D., Professor; and D. Bossik, B.A., Senior Research Assistant, Department of Psychology, Hebrew University, Jerusalem, Israel.
Purpose: To investigate Arabian children's performance on the Wechsler Preschool Primary Scale of Intelligence (WPPSI) using a translation of the Hebrew WPPSI.
Subjects: 80 Arabian children, ages 5 to 6-1/2, from two Arabian villages near Jerusalem, who attend three different schools.
Methods: Individual tests were administered to the children, and scoring was done according to the Hebrew standardization. The results included mean IQ total, verbal, and performance, and profiles of the 10 subtests for each group.
Findings: The three Arabian schools show some similarity in their test performance, and very significant differences when compared to formerly tested Jewish samples.
Duration: March 1970-June 1972.
Cooperating group(s): Human Development Center.
Publications: Lieblich, A.; Kugelmass, S.; and Ninio. Effects of ethnic origin and parental SES on WPPSI performance of preschool children in Israel. *Journal of Cross Cultural Psychology* (in press).

30-DD-4 A DEVELOPMENTAL APPRAISAL OF JAMAICAN CHILDREN FROM 1 YEAR TO 5 YEARS OF AGE

Investigator(s): William A. Hawke, M.D., Director, Division of Growth and Development, Hospital for Sick Children, 555 University Avenue, Toronto 2, Ontario, Canada.
Purpose: To determine the changes in the pattern of development of Jamaican children, and to determine at what age and to what extent these changes occur.
Subjects: A selected group of children born in the University Hospital of the West Indies, Kingston, Jamaica.
Methods: Assessment of the children is primarily based on a combined test using items from the Gesell Developmental Schedules and the Stanford-Binet Intelligence Scale. When possible, individual children will be followed over a 5-year period.
Findings: A gradual falling off in the verbal and language abilities of the children has been found. Their motor skills and personal social skills have remained at a relatively

normal level. Their adaptive skills have shown a slight drop, but not to the degree of the language skills.
Duration: March 1967-March 1972.
Cooperating group(s): Department of Pediatrics, University of the West Indies, Kingston, Jamaica.

30-DE-1 CONCEPT IDENTIFICATION WITH MNEMONIC CUES AS A FUNCTION OF CHILDREN'S SEX AND AGE

Investigator(s): Vladimir Pishkin, Ph.D., Professor, School of Medicine, University of Oklahoma, Oklahoma City, Oklahoma; and Veterans Administration Hospital, 151A, 921 Northeast Thirteenth Street, Oklahoma City, Oklahoma 73104.
Purpose: To investigate the effects of memory cues and the availability of correct and/or incorrect past instances upon concept identification learning rates of children.
Subjects: 144 elementary school students in Oklahoma City, Oklahoma, randomly selected, equally divided by sex, and equally divided between grade 1 (ages 6 and 7) and grade 3 (ages 8 and 9).
Methods: A 2 X 2 X 2 X 3 X 2 factorial design is used with three students randomly assigned per cell, for a total of 48 conditions. Five main effects and their respective interactions were examined: (1) sex, (2) grade level (first or third grade), (3) number of past cues available (1 or 2 cues), (4) types of cues (past right, wrong, or combination of both right and wrong), and (5) problem (color or form relevant). For all problems, one of two dimensions (form or color) was relevant; these dimensions were alternated with every three students.
Findings: Third grade girls were superior to males in their overall concept identification performance, although with sex groups pooled, the first and third graders performed at the same level. The availability of two past instances significantly improved performance as compared to conditions where only one past instance was proved, particularly when the past available instances were wrong or a combination of right and wrong. Girls were able to profit from their past, correct and incorrect responses to a greater degree than boys.
Duration: June 1970-January 1973.
Cooperating group(s): Oklahoma City Public Schools.

30-DF-1 NONVERBAL BEHAVIOR OF YOUNG CHILDREN AS IT RELATES TO THEIR DECISION MAKING

Investigator(s): Jessie A. Roderick, Ed.D., Associate Professor, Research Associate, Center for Young Children, Department of Early Childhood—Elementary Education, College of Education, University of Maryland, College Park, Maryland 20742.
Purpose: To examine the nonbehal behavior of young children as it relates to their decision making processes.
Subjects: 21 nursery school and kindergarten boys and girls including five East Indian children, from three age groups.
Methods: Observational records of the children's behavior in the classroom setting were analyzed by content and by a pupil nonverbal behavior category system which was developed to collect data during free play. In addition to noting nonverbal behaviors exhibited by the children, the observers recorded evidences of personal interaction,

completion of a task, and whether the activity engaged in indicated a beginning, middle, or end of a decision. Resulting data were reported in mean frequencies, percentages, and rankings, and were analyzed according to age and sex.

Findings: The frequency of nonverbal behaviors was found to vary with age and sex. In both the principal and pilot studies, the majority of beginning points on the decision-making continuum were observed in the task oriented (nonverbal) category, the majority of middle points in the focusing seeking category, and the majority of end points in the withdrawn category. More decisions were made alone than in interaction with another person, and the number of decision-making behaviors varied with sex.

Duration: September 1970-June 1971.

Publications: Berman, Louise M. (Ed.) *Nonverbal behavior of young children as it relates to their decision making: A report of research findings. Monograph 5.* College Park, Maryland: University of Maryland Nursery-Kindergarten, 1971.

30-DF-2 THE DEVELOPMENT OF A TEST TO MEASURE PROBLEM SOLVING ABILITY

Investigator(s): Joanne Yinger, M.A., Researcher, Far West Laboratory for Educational Research and Development, 1 Garden Circle, Hotel Claremont, Berkeley, California 94705.

Purpose: To develop an instrument to measure children's problem solving abilities.

Subjects: 18 boys and 22 girls, ages 6 to 9. Half of the children are white and half are nonwhite; 29 are from poverty backgrounds, and 11 are from higher social classes.

Methods: A patterning game was devised to assess six abilities that were identified as good qualities for problem solving: willingness to take responsible risks of failure, ability to use additional information, expression of confidence in one's solutions, inductive reasoning, deductive reasoning, and ability to take a different perspective. The game consists of 13 patterns of numbers, shapes, colors, locations, word relationships, classification and number relationships, and nonsymbolic figures. The game consists of six scales that reflect the six abilities identified.

Findings: The data have been analyzed to determine the reliability of the items and the six scales and the extent to which the scales are independent of each other. The correlations of each item with the total scale are all within the acceptable range; most are between .60 and .84. The factor analysis of the six scales yields only one significant factor.

Duration: February 1971-August 1972.

Publications: A report of the research is available from the investigator.

30-DG-1 EXPLORATORY BEHAVIOR AND LEARNING IN CHILDREN

Investigator(s): Jum C. Nunnally, Ph.D., Professor, Department of Psychology, Vanderbilt University, Nashville, Tennessee 37203.

Purpose: To investigate the causes of exploratory behavior, to examine how exploratory behavior relates to human development, and to harness exploratory behavior in behalf of education.

Subjects: Hundreds of boys and girls in public schools in Nashville, Tennessee.

Methods: Principal reliance will be placed on an investigation of looking behavior. In a typical project, children are shown pairs of pictures that differ in terms of novelty, complexity, or some other instigator of exploratory behavior. Measures are taken of the amount of time fixated on each of the two pictures. Numerous psychophysical scales for stimulus variables relating to exploratory behavior have been developed.

Findings: Visual exploration is lawfully related to stimulus variables such as incongruity, other forms of novelty, and various types of complexity. No simple relationship exists between stimulus selection and pleasantness of the stimuli. There may be important differences relating to age.
Duration: June 1971-December 1973.
Cooperating group(s): National Science Foundation.
Publications: Durham, R. L.; Nunnally, J. C.; and Lemond, L. C. The effects of levels of information conflict on visual selection. *Perception and Psychophysics,* 1971, 10, 93-96; Faw, T. T. and Nunnally, J. C. The influence of stimulus incongruity on the familiarity effect in visual selection. *Perception and Psychophysics,* 1971, 9, 150-154; Faw, T. T. and Nunnally, J. C. Effects of familiarization with incongruous stimuli on their dominance in visual selection. *Psychonomic Science,* 1970, 19, 359-361.

30-DG-2 PERCEPTUAL EXPLORATION IN BEDOUIN CHILDREN

Investigator(s): S. Kugelmass, Ph.D., Professor; A. Lieblich, Ph.D., Lecturer; and H. Erlich, M.A., Senior Research Assistant, Department of Psychology, Hebrew University, Jerusalem, Israel.
Purpose: To compare perceptual exploration among children of various cultures, and to clarify some nature-nurture issues concerned with a perceptual exploration task.
Subjects: 104 Bedouin school children, boys and girls, ages 6 to 13, grades 1 to 5, from illiterate nomad backgrounds.
Methods: A perceptual task was individually administered to the children. Data were analyzed using several indices and were tabulated by grade. Comparisons were made between this sample and a Jewish-Israeli sample.
Findings: The subjects were found to be similar to the Jewish children in their amount of organization and directionality, but differed in their strong tendency to start scanning from the lower part of the card rather than the higher part. As in the Jewish sample, organization and directionality were related to grade.
Duration: June 1971-April 1972.
Cooperating group(s): Human Development Center.
Publications: Kugelmass, S. and Lieblich, A. Perceptual exploration in Israeli children. *Child Development,* 1970, 41, 1125-1131.

30-DG-3 DEVELOPMENTAL ASPECTS OF INTERHEMISPHERIC COMMUNICATION

Investigator(s): John S. Robinson, Ph.D., Chief Research Psychologist; and Francis M. Crinella, Ph.D., Staff Psychologist, Child Development Program, Sonoma State Hospital, Eldridge, California 95431.
Purpose: To study changes in the behavior potential of children that occur with the anatomical development of children's cerebral commissures.
Subjects: Normal and retarded children and children with specific learning disabilities, ages 5 to 11.
Methods: Visual, tactile, and visual-tactile matching tests were employed.
Findings: Simple haptic matching of textures and forms appears to be transmitted across the cerebral commissures readily, even at the youngest age levels tested.
Duration: July 1970-July 1973.
Cooperating group(s): Sonoma Valley Unified Public School District.
Publications: Crinella, F. M.; Beck, F. W.; and Robinson, J. S. Unilateral dominance is not related to neuropsychological integrity. *Child Development,* 1971, 42, 2033-2054.

30-DG-4 A STUDY OF THE EFFECT OF PERCEPTUAL-MOTOR TRAINING ON VISUAL-MOTOR INTEGRATION AND SELF-CONCEPT AMONG CHILDREN WITH AND WITHOUT VISUAL-MOTOR DEFICIENCIES

Investigator(s): Geoffrey S. Beitner, M.S., Director, Sherwood Program for Children with Learning Disabilities, 33 North High Street, Clinton, Connecticut 06413.
Purpose: To investigate the possible relationships between children's visual-motor integration and their self-concept.
Subjects: Eight boys and two girls, ages 6 to 16 (four of whom have definite visual-motor problems), who were selected from a group of children with learning disabilities.
Methods: The Beery Test of Visual-Motor Integration and the Piers-Harris Self-Concept Scale were administered to the children before and after 6 weeks of perceptual-motor training. Results were analyzed in terms of relationships between visual-motor integration and self-concept, chronological age and both variables, and reliability and rank order measurements.
Findings: Results indicate that visual-motor integration and self-concept are positively related, and chronological age is positively related to both variables. Children with more severe problems benefited the most from the program. All children were found to improve in both variables by the conclusion of the program.
Duration: June 1971-August 1971.
Publications: Results of the project are available from the investigator.

30-DH-1 STUDIES IN NORMAL AND ABNORMAL EMERGENT LANGUAGE DEVELOPMENT

Investigator(s): Kenneth R. Bzoch, Ph.D., Professor, Department of Communication Disorders, College of Health Related Professions, University of Florida, Gainesville, Florida 32601.
Purpose: To conduct detailed descriptive research on the development of decoding and encoding language skills in the first three years of life.
Subjects: 200 normal boys and girls, ages 1 to 36 months, from good linguistic environments; and 50 abnormal infants (some retarded, some with cleft palates), ages 1 to 3, from deprived environments.
Methods: Monthly television tape recordings were made of the infant and mother interacting. Sensory modalities of the stimuli varied. Interviews were conducted and rating scales and biometric recordings were used.
Duration: 1964-continuing.
Cooperating group(s): Department of Dentistry and Department of Medicine, University of Florida.
Publications: *Assessing language skills in infancy.* Gainesville, Florida: Tree of Life Press, Inc., June 1971; Satz, Paul (Ed.) *The disabled learner.* Amsterdam Press (in press).

30-DH-2 ASPECTS OF THE ACQUISITION OF ENGLISH AND SPANISH PHONOLOGY

Investigator(s): Charles Ferguson, Ph.D., Chairman, Committee on Linguistics, Department of Linguistics, Stanford University, Building 101, Stanford, California 94305.

Purpose: To study young children's acquisition of initial fricatives and glides in English and medial consonants in Spanish.
Subjects: Group I: 15 girls and 13 boys, ages 1½ to 4, from monolingual English-speaking families; Group II: 4 girls and 6 boys, ages 1 year 5 months to 2 years 3 months, from monolingual English-speaking families; Group III: 8 boys and 5 girls, ages 2 to 4, from monolingual Spanish-speaking families.
Methods: This is Phase II of a two-part research project. (See *Research Relating to Children, Bulletin 25*, 1969, 26-27 for a description of Phase I of the study.) For Group I, the Shvachkin-Garnica discrimination technique will be employed. For Group II, the children's spontaneous and imitated speech will be elicited and recorded, especially with concern for glides and fricatives. For Group III, recordings will be made of the children's repetition of vowel-consonant-vowel sequences.
Duration: September 1971-August 1974.
Cooperating group(s): National Science Foundation.

30-DH-3 ELEMENTARY PUPILS' KNOWLEDGE OF THE STRUCTURE OF AMERICAN ENGLISH AND THE RELATIONSHIP OF SUCH KNOWLEDGE TO THE ABILITY TO USE LANGUAGE EFFECTIVELY IN COMPOSITION

Investigator(s): John Warren Stewig, Ph.D., Assistant Professor; and Pose M. Lamb, Ph.D., Professor, Department of Education, Purdue University, 202-F Education Building, Lafayette, Indiana 47907.
Purpose: To determine whether children's conscious knowledge of English structure bears any relation to their quality of writing.
Subjects: Eight classrooms of children in grade 6, Negro and Caucasian, from lower, middle, and upper classes.
Methods: Knowledge of English structure was measured by the Linguistic Ability Measurement Program (LAMP). The LAMP directions were recorded on tape by a communications professional to insure stability of administration. The project directors motivated the writing in the children's own classrooms, and the same director worked with each group three times to insure continuity. Seven judges achieved interjudge reliability and scored the writing samples (including expository, creative writing, and poetry) using the Yamamoto Scale. A one-way analysis of variance and product-moment correlations will be computed to determine what relations exist between the two measures for the various populations in the study.
Duration: September 1971-August 1972.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare; Indianapolis Public Schools; West Lafayette School Corporation.

30-DH-4 TOWARDS A COMMUNICATIVE COMPETENCE MODEL: ITS APPLICATION TO CHILD LANGUAGE

Investigator(s): A. J. M. van der Geest, Doctorandus, Assistant Professor, Institute of General Linguistics, University of Amsterdam, Spui 21, Amsterdam, Netherlands.
Purpose: To demonstrate the linguistic shortcomings of present language acquisition theories, and to propose and demonstrate a psycholinguistic model by which a more valid account can be made with respect to the linguistic analysis of child language.
Subjects: Five Dutch boys and girls, ages 18 to 30 months.
Methods: The study is highly theoretical in nature, and its application to language acquisition is based on approximately 2,000 utterances of the subjects.

Duration: March 1969-April 1973.
Publications: van der Geest, A. J. M. Some nonverbal aspects of language acquisition. In *International Congress on Education of the Deaf, Stockholm, 1970.* Published in Stockholm, 1972.

30-DH-5 A LINGUISTIC ANALYSIS OF VERBAL INTERACTION BETWEEN MOTHER AND CHILD

Investigator(s): A. J. M. van der Geest, Doctorandus, Assistant Professor; and C. E. Snow, Ph.D., Assistant Professor, Institute for General Linguistics, University of Amsterdam, Spui 21, Amsterdam, Netherlands.
Purpose: To characterize the speech heard by young children and relate changes in that speech to development of the children's linguistic ability.
Subjects: Ten Dutch children, ages 18 to 30 months; and their mothers.
Methods: Recordings are made of the spontaneous speech of each child and his mother in normal interaction at home at 1-month intervals for 6 months. The dependent variables consist of spontaneous and nonspontaneous, and responded to or not responded to utterances, which are analyzed by the Syntactic Complexity Score developed at the Institute of General Linguistics.
Duration: October 1971-December 1972.
Publications: van der Geest, A. J. M. Naar een Syntactic Complexity Score. In *Taalwetenschap in Nederland, 1972.* University of Amsterdam, 1972; Tervoort, B. Th. Linguistishe evaluatie van een compensatieprogramma. In *Taalwetenschap in Nederland, 1972.* University of Amsterdam, 1972.

30-DH-6 LINGUISTIC ANALYSIS OF COMMUNICATIVE COMPETENCE OF THREE SOCIALLY DIFFERENT GROUPS OF CHILDREN

Investigator(s): R. Appel, M.A.; A. J. M. van der Geest, Doctorandus, Assistant Professor; R. Gerstel, Doctorandus; and B. Th. Tervoort, Professor, Institute of General Linguistics, Spui 21, Amsterdam, Netherlands.
Purpose: To find differences in the language acquisition process that depend only on environmental factors.
Subjects: Three groups of 14 boys, ages 3 to 4, from each of three environments: an isolated uneducated working class environment, an open uneducated working class environment, and an academic environment.
Methods: 150 utterances of each child are analyzed. Seven language measures are used: (1) the first six reliable language measures (Templin, 1957), and (2) a recently developed syntactic complexity score that gives a quantitative inventorization of all possible constructions. It consists of two parts: (1) semantic intent subdivided into kernel, expansions, and operations, and (2) realization (morphology, word order, etc.) including a section approximation (deletion, substitution, etc.)
Findings: The lower class groups each differed significantly from the academic group by the traditional measures. A factor analysis has yielded three highly relevant factors with respect to age and environment.
Duration: April 1971-August 1972.
Cooperating group(s): Municipal Office of Psychology, Haarlem, Holland.

Publications: Tervoort, B. Th. Linguistische evaluatie van een compensatie-programma. In *Taalwetenschap in Nederland, 1972*. University of Amsterdam, 1972; van der Geest, A. J. M. Naar een syntactische complexiteitsscore. In *Taalwetenschap in Nederland, 1972*. University of Amsterdam, 1972.

30-DH-7 EFFECTS OF PARADIGMATIC RESPONSE TRAINING ON CHILDREN'S WORD ASSOCIATIONS

Investigator(s): Donald K. Routh, Ph.D., Associate Professor, Department of Psychology, University of North Carolina, Chapel Hill, North Carolina 27514; and Ryan D. Tweney, Ph.D., Assistant Professor, Department of Psychology, Bowling Green State University, Bowling Green, Ohio 43402.
Purpose: To study the effects of paradigmatic response training on children's word associations.
Subjects: 60 children: 30 kindergartners and 30 children in grade 5.
Methods: A free association test was given to the children followed by systematic training in producing paradigmatic associates (response word of the same grammatical form class as the stimulus words). The training involved instructions, prompting, and examples. Candy rewards were given for correct responses.
Findings: Under all conditions, children in grade 5 produced more paradigmatic responses than did kindergarten children. Training and controlled association instructions led to a slight increase in paradigmatic responding to verbs and adjectives for both groups and a slight decrease in paradigmatic responding to nouns by the kindergarten children. The latter result was interpreted as a reduction in the frequency of *primitive* noun responses.
Duration: 1970-completed.

30-DH-8 GRAMMATICAL RESPONSES OF SECOND GRADE CHILDREN AS A FUNCTION OF STANDARD AND NONSTANDARD ENGLISH PRESENTATIONS

Investigator(s): Samuel J. Marwit, Ph.D., Assistant Professor; Karen L. Marwit, M.S. Ed., Research Associate; and John J. Boswell, Ph.D., Assistant Professor, Department of Psychology, University of Missouri, 8001 Natural Bridge Road, St. Louis, Missouri 63121.
Purpose: To investigate nonstandard grammar patterns of Negro children in relation to standard and nonstandard modes of presentation by Negro and Caucasian examiners.
Subjects: 340 grade 2 children, equally divided by sex, of whom half are Negro and half are Caucasian.
Methods: The children's responses were assessed for syntactic structures. Negro and Caucasian examiners presented instructions in both standard and nonstandard English.
Findings: Consistent racial differences were found in the children's formation of present tense, pluralization of objects, and possessive case. Little interaction was found with the race of the examiner, or with the mode of instruction.
Duration: September 1971-September 1972.
Cooperating group(s): St. Louis County Public School System.
Publications: Marwit, S. J.; Marwit, K. L.; and Boswell, J. J. *Journal of Educational Psychology* (in press).

Personality

30-EA-1 CHILD BEHAVIOR PRECURSORS OF ADULT PERSONALITY TRAITS

Investigator(s): Leland H. Stott, Ph.D., Emeritus, Leader, Longitudinal Studies Program, Merrill-Palmer Institute, 71 East Ferry Avenue, Detroit, Michigan 48202.
Purpose: To determine whether and to what extent any part of a set of behavior variables identified and appraised in a group of 4-year-olds continues to be evident in these same individuals after a period of 35 years.
Subjects: 29 white, middle class Americans, male and female, studied first at age 4 and later at ages 39-40.
Methods: The behavior variables were first appraised at age 4 from behavior checklist records, and related and supplementary data were collected from birth to middle childhood. Follow-up personality data were collected by means of the IPAT 16-Personality Test after a lapse of 35 years. Correlations among the 13 childhood variables and the 16 personality scores will be computed. Selected individual case studies will be used to illustrate the statistical findings.
Findings: Preliminary examinations of the data suggest that some significant correlations exist. Some childhood behavior predictors of adult traits will be identified.
Duration: 1970-1972.

30-EA-2 THE MEASUREMENT OF EMOTION IN THE FIRST YEAR OF LIFE

Investigator(s): Therese Gouin Decarie, Ph.D., Professor; J. Laroche, Ph.D., Professor; and M. Gilbert, Ph.D., Professor, Institut de Psychologie, University of Montreal, C.P. 6128, Montreal, Quebec, Canada.
Purpose: To investigate the stability of a child's response to a stranger in a standard situation, to compare emotional responses (e.g., laughing, crying) in the home and in the laboratory in various standard situations, and to study the relationship between emotional response and physiological indices.
Subjects: Several samples of home reared Canadian infants, equally distributed according to sex and age, from various socioeconomic backgrounds.
Methods: Several cross-sectional studies will be undertaken. The standard situations to be studied are (1) reaction to the stranger, (2) exploration in a strange situation, (3) separation from the mother, and (4) return of the mother following separation.
Findings: The reaction to the stranger does not appear to be as stable as the existing literature indicates.
Duration: September 1971-September 1974.
Cooperating group(s): Canada Council.

30-EB-1 BUILDING SELF-ESTEEM IN THE CLASSROOM

Investigator(s): Stanley Coopersmith, Ph.D., Department of Psychology, University of California at Davis, Davis, California 95616; and Robert Reasoner, M.A., Principal, Bancroft School, Walnut Creek, California 94596.

Purpose: To create a school program that gives the child an image of being an effective learner and enables him to employ that image as a basis of his self-esteem.
Subjects: 530 boys and girls, grades kindergarten through 6, in one school in Walnut Creek, California. The children are from middle class backgrounds.
Methods: The children will be divided into control and experimental groups, and pre- and posttests will be given to assess performance and to measure affect.
Duration: September 1971-June 1974.
Cooperating group(s): Mt. Diablo Unified School District, California.

30-EC-1 HIGH SCHOOL STUDENTS' ATTITUDES TOWARDS HIGHER EDUCATION, WORK, AND FAMILY LIFE

Investigator(s): Alexander Tolor, Ph.D., Director, Institute for Human Development and Research; and Professor, Department of Psychology, Fairfield University, Fairfield, Connecticut 06430.
Purpose: To assess high school seniors' attitudes on major life areas that are relevant to their future behavior.
Subjects: 2,908 high school seniors, male and female, in Fairfield County, Connecticut.
Methods: A specifically developed survey form with items in family life, work, and education areas has been constructed. Each item indicates the degree of traditionality of attitude. A condensed version of the Parental Attitude Research Instrument was also employed.
Findings: The students exhibit in their attitudes an intermediate position on the traditional-radical continuum. Ethnic, sex, and residence differences occur, and relationships exist between perceived maternal childrearing attitudes and the respondent's traditionality of response.
Duration: September 1970-January 1972.
Cooperating group(s): Connecticut Research Commission.

30-EF-1 PSYCHOPHYSIOLOGICAL RESPONSES TO STRESS AMONG DIFFERENT SUBGROUPS OF ASTHMATIC CHILDREN

Investigator(s): Donald R. Miklich, Ph.D., Research Psychologist and Statistician, Children's Asthma Research Institute and Hospital, 3401 West Nineteenth Street, Denver, Colorado 80204; Helen H. Rewey, Ph.D., Clinical Psychologist, Jefferson County Mental Health Center, Lakewood, Colorado 80915; and Jonathan H. Weiss, Ph.D., Associate Professor, Department of Psychology, Yeshiva University, New York, New York 11233.
Purpose: To compare the psychophysiological responses to a standardized psychological stressor of asthmatic children whose asthma can be triggered by emotions with those of asthmatics whose asthma is not triggered by emotions.
Subjects: 17 male asthmatics, ages 11 years 7 months to 16 years 9 months, six of whom reported emotional precipitants, five of whom reported only infrequent emotional precipitants, and six of whom reported no emotional precipitants.
Methods: Heart rate, finger pulse amplitude, and respiration patterns and durations were measured during 12 trials in which the boys did arithmetic problems mentally. During the first six trials the boys were praised regardless of their work, and during the second six trials they were criticized.
Findings: The respiration patterns of emotional asthmatics were different and apparently more abnormal than those of patients who reported no emotional precipitants. This may

indicate that emotions mediate asthma, not through psychopathology, but rather through abnormal respiratory patterns.
Duration: July 1970-completed.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-EF-2 EMOTIONAL AND RESPIRATORY BEHAVIORAL ANTECEDENT CORRELATES OF PEAK EXPIRATORY FLOW RATE CHANGES IN ASTHMATIC CHILDREN

Investigator(s): Donald R. Miklich, Ph.D., Research Psychologist and Statistician, Children's Asthma Research Institute and Hospital, 3401 West Nineteenth Avenue, Denver, Colorado 80204; K. Purcell, Ph.D., Chairman, Department of Psychology, University of Denver, Denver, Colorado 80201; and Jonathan H. Weiss, Ph.D., Associate Professor, Department of Psychology, Yeshiva University, New York, New York 11233.
Purpose: To determine by naturalistic observations whether certain emotions (anger, excitement, and depression) and certain respiratory behaviors (yelling, coughing, laughing, and heavy breathing) could precipitate asthma or decreases in flow rates.
Subjects: 20 asthmatic boys, ages 12 to 16.
Methods: Portable stereo transmitters were worn by the subjects for periods of from 4 weeks to 4 months. Recordings were made of the subjects' conversations and the sounds of their breathing. Flow rate measurements were periodically made while the children wore the transmitters. Subsequent perusal of the recordings determined when the variables of interest occurred, and these were correlated with changes in flow rates or with the occurrence of asthma.
Findings: Drops in flow rate are associated with increases in respiratory behaviors for all subjects. Anxiety and depression have not occurred frequently enough to permit analysis, but some subjects do show drops in flow rates after experiencing anger or excitement.
Duration: July 1970-July 1972.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-EF-3 CHILDREN'S EXPERIENCE WITH DEATH

Investigator(s): Rose Zeligs, Ed.D., Clinical Psychologist, 14256 Ventura Boulevard, Sherman Oaks, California 91403.
Purpose: To help professional and lay people gain a better understanding of children's concepts and attitudes towards death, in order to help them deal with death more adequately and lessen its traumatic effect.
Subjects: Children who had been disturbed by experiences with death.
Methods: Descriptions were made of personal case studies of children and their parents who were in therapy because the child had been disturbed by an experience with death. Descriptions were also made of recent reports of medical and psychological research, and personal attendance at symposia, conferences, seminars, and workshops.
Findings: Children are confused about death, a subject which has been taboo in our present culture. Their concepts of death grow with their development and experiences.
Duration: 1968-1972.

30-EG-1 KODALY FELLOWSHIP PROGRAM

Investigator(s): Alexander L. Ringer, Ph.D., Professor, Department of Musicology, University of Illinois, Urbana, Illinois 61801.
Purpose: To develop a program of daily musical instruction for primary school children both as a nonverbal means of improving conceptual thinking and in the interest of aesthetic education.
Subjects: 250 boys and girls, kindergarten through grade 3.
Methods: A study will be made to compare the academic and creative performance of children exposed to a Kodaly music program to the performance of children with identical backgrounds and previous achievement who were not exposed to such a program.
Findings: A preliminary independent evaluation at the University of Connecticut has confirmed the relevance of the Kodaly teaching method with children in grades 1 and 2.
Duration: Fall 1969-spring 1973.
Cooperating group(s): New Haven Schools, Connecticut; Office of Education, U. S. Department of Health, Education, and Welfare; National Endowment for the Arts; Ferenc Liszt Academy of Music, Budapest, Hungary.
Publications: Ringer, Alexander L. An experimental program in the development of musical literacy. ERIC, ED 048 319; price $0.65 on microfilm; $3.29 for a xerox reproduction; 74 pages. Order from; EDRS, LEASCO Information Products, Inc., P.O. Box Drawer O, Bethesda, Maryland 20014.

Social

30-FA-1 COOPERATION IN ELEMENTARY SCHOOL CHILDREN: THE TEACHING AND LEARNING OF HELPING

Investigator(s): Emmy A. Pepitone, Ph.D., Assistant Professor, Department of Education and Child Development, Bryn Mawr College, Bryn Mawr, Pennsylvania 19010.
Purpose: To study the conditions that are conducive to the development of cooperative behavior in young school children.
Subjects: 150 boys and girls in grade 4, from a suburban upper middle class school district outside of Philadelphia.
Methods: Three children are taken from the classroom at a time and placed in a special room in the school where they are presented with a group activity which involves making a design out of pattern blocks on a large circular board. Appropriate instructions are designed to create three different conditions that are predicted to bring about interpupil cooperation: interdependent work structures, functional role interdependence, and group standards. Interpersonal behaviors are recorded by trained interaction observers. The group product is scored and will be analyzed by analysis of variance.
Findings: The children are preoccupied with their individual goals, even if they are assigned specific group roles.
Duration: Fall 1971-fall 1972.
Cooperating group(s): U. S. Department of Health, Education, and Welfare.

30-FA-2 ANALYSIS OF SOCIAL SKILLS DEVELOPMENT IN THE EARLY CHILDHOOD EDUCATION PROJECT

Investigator(s): Deagelia Pena, Ph.D., Research Specialist, Office of Research, Board of Education, 5057 Woodward Avenue, Detroit, Michigan 48203; and George L. Miller, Ph.D., Appalachia Educational Laboratory, Box 1348, Charleston, West Virginia 25322.
Purpose: To determine the differential effects of three components of an early childhood education program on the social skills development of young children.
Subjects: 100 children, ages 3 to 5, who reside in Appalachian regions of West Virginia.
Methods: Home visitation by paraprofessionals, television instruction, and classroom instruction were the three factors analyzed. The children are videotaped in groups of four while left by themselves to accomplish a task. A systematic observation of interaction was developed.
Findings: Results indicate that children who were visited at home by paraprofessionals and received television instruction, and children who also attended a mobile classroom once a week, have better developed social skills reflected by their constructive behavior and initiating verbalization. The children who received only television instruction tended to withdraw from groups for security or to work alone on the task.
Duration: January 1970-June 1971.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-FA-3 THE ONTOGENY OF PLAY AND THE CONSTRUCTION OF A PLAY WORLD

Investigator(s): Helen E. Beale, M.A., Department of Anthropology, Northwestern University, Evanston, Illinois 60201.
Purpose: To study the phenomenon of play from the point of view of the child in terms of the world of meaning he experiences in play situations.
Subjects: 22 boys and 20 girls, ages 3 to 5, who reside in an urban neighborhood of Chicago, Illinois. The children are from Appalachian, Black, and Spanish-American backgrounds.
Methods: The study will be concerned with the play world within a developmental, spatial-temporal, and communication context. The types of procedures used include informal interaction with informants, interviews, and still photographs and movie film.
Duration: September 1971-January 1973.
Cooperating group(s): Commission on Research in Recreation and Leisure, National Research Council, National Academy of Sciences; Ford Foundation.

30-FA-4 PEER SELECTION AS RELATED TO INTERPERSONAL CONCEPTUAL LEVEL

Investigator(s): Toni E. Santmire, Ed.D., Assistant Professor, Department of Educational Psychology and Measurements, University of Nebraska, Lincoln, Nebraska 68508.
Purpose: To describe peer groups in terms of interpersonal conceptual level, to determine if early adolescents prefer to be with peers who are like themselves in interpersonal conceptual level, and to examine the character of peer groups as a function of conceptual level.
Subjects: 500 boys and girls in grade 7, ages 12 to 14, from various socioeconomic backgrounds.

Methods: The students will be given a sociometric instrument at the beginning, middle, and end of the academic year. The Paragraph Completion Test for assessing interpersonal conceptual level will be administered at the beginning and end of the year. The student's IQ score, grade 6 teacher, and father's occupation will be determined. These data were also available for 250 additional grade 7 students from the previous year. Peer groups were identified, and the conceptual level variance for the peer groups was compared with that of various reference groups, including a grade 6 class and the entire seventh grade. IQ variances were also compared for the same groups.
Findings: Initially peer groups in grade 7 appear to center primarily around the sixth grade classroom. After a semester in grade 7, interpersonal conceptual level appears to become a factor in peer selection. Groups, whose average conceptual level is low with low variance, tend to be small, relatively isolated groups.
Duration: January 1971-June 1972.
Cooperating group(s): Robin Mickle Junior High School.

30-FC-1 SMOKING BEHAVIOR OF GRADE 7 AND 8 SCHOOL CHILDREN

Investigator(s): F. R. Wake, Ph.D., Coordinator; and Eleanor Thomas, B.A., Research Assistant, Department of Psychology, Carleton University, St. Patrick's College Campus, 281 Echo Drive, Ottawa, Ontario K1S 1N4, Canada.
Purpose: To survey smoking behavior and attitudes of school children, to study the effect of several smoking education programs on their behavior and attitudes, and to develop a practical smoking education curriculum.
Subjects: Two groups of approximately 2,500 grade 7 public school students, both sexes, ages 11 to 15.
Methods: Two control groups and seven experimental groups were used for the first year sample, while two control groups and four experimental groups were used for the second year sample. Questionnaires on the students' behavior and attitudes were completed initially and then periodically over a 2-year period. Smoking education programs in different combinations were given to the experimental groups in grade 7. An additional program was presented to some of the groups in grade 8. Relationships among variables and changes in smoking behavior and attitudes were assessed by a chi-square comparison.
Duration: Summer 1968-summer 1972.

30-FC-2 PLANNING AND DEVELOPMENT PROJECT FOR A PROGRAM OF EVALUATION AND REMEDIATION FOR CHILDREN OF DRUG ABUSING MOTHERS

Investigator(s): James E. Kean, M.A., Director, Children's Division of Lighthouse for the Blind, 3602 West Dallas Street, Houston, Texas 77019; and Geraldine S. Wilson, M.D., Director, High Risk Clinic, Jefferson Davis Hospital, 1801 Allen Parkway, Houston, Texas 77025.
Purpose: To identify infants of drug abusing mothers, to study their development and educational potential, and to provide remediation when indicated.
Subjects: 150 children, ages 0 to 6, born to mothers who used addictive or other abusive drugs during pregnancy.
Methods: Groups of infants born to mothers who used amphetamines, opiates, barbiturates, or hallucinogens during pregnancy will be studied with periodic assessment of somatic growth, physical and neurological status, development, and behavior.

Findings: A follow-up of a small sample of infants of addicts over 2 years has shown significant behavioral abnormality associated with certain patterns of maternal drug use.
Duration: March 1972-August 1972.
Cooperating group(s): Family Service Agency; U. S. Department of Health, Education, and Welfare.

30-FC-3 DRUGS AND PERSONALITY

Investigator(s): Gene M. Smith, Ph.D., Associate Professor, Department of Psychology, Medical School, Harvard University, Boston, Massachusetts 02115; and Psychologist, Department of Anesthesia, Massachusetts General Hospital, Fruit Street, Boston, Massachusetts 02114.
Purpose: To obtain information that will help elucidate the psychodynamics of the use of drugs among children.
Subjects: Approximately 23,000 boys and girls, grades 4 to 12, attending suburban Boston public schools.
Methods: The relations among six categories of variables will be studied. The variables include use of drugs, attitudes towards drug taking, cigarette smoking, attitudes towards cigarette smoking, personality, and academic performance. Questionnaires have been developed to assess the first five variables. Cross-sectional analyses will be performed to study each category of variables in relation to each of the other five categories at a given point in time. Longitudinal analyses will be performed to obtain information concerning sequences of change. Standard univariate and multivariate statistical procedures will be used to analyze the data.
Duration: February 1971-January 1974.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-FC-4 SURVEYS OF THE NATURE OF DRUG USE IN YOUNG PEOPLE

Investigator(s): R. G. Smart, Ph.D., Associate Research Director; and H. Annis, Ph.D., Addiction Research Foundation, 33 Russell Street, Toronto, Ontario, Canada.
Purpose: To determine the social and demographic characteristics of high school drug users and the correlation between parental and adolescent drug use.
Subjects: Groups of 1,500 to 8,500 Ontario high school students.
Methods: Surveys were made of self-reported drug use, group discussions, and ethnographic studies.
Findings: A close connection has been found between parents' drug use and the drug use of their adolescents.
Duration: 1968-1973.

30-FE-1 CHILDREN AND SYMPHONY: A STUDY OF CONCERT EFFECTS

Investigator(s): Peter Clarke, Ph.D., Director, School of Communications, University of Washington, Seattle, Washington 98195.

Purpose: To examine children's communication behavior and co-orientation following an introduction to symphony.
Subjects: Students in suburban public schools, grades 9 and 11.
Methods: Data will be collected through a field experimental design, manipulating preconcert exposure to symphonic music and administering postconcert, self-completed questionnaires.
Duration: September 1969-May 1972.
Cooperating group(s): Seattle Symphony; Federal Way, Highline, Olympia, North Thurston County, Bellevue, Shoreline, and Lake Washington School Districts.
Publications: *American Behavioral Scientist*, January, 1971.

30-FE-2 VERBAL INTERACTION PROJECT

Investigator(s): Phyllis Levenstein, Ed.D., Director, Verbal Interaction Project, Mother-Child Home Program, Family Service Association of Nassau County, Inc., 2 Brooklyn Avenue, Freeport, New York 11520.
Purpose: To investigate short-term and long-range affective and cognitive effects of an experimental, home based cognitive intervention program for disadvantaged children.
Subjects: Approximately 220 potentially educationally disadvantaged (low income) children, ages 2 to 4; 40 of whom are in comparison groups, and 180 of whom are in the Mother-Child Home Program.
Methods: The total population of 2- and 3-year-olds residing in three geographically separate public housing projects was randomly assigned to experimental and comparison groups (untreated and placebo). The experimental group was exposed to the Mother-Child Home Program, which consisted of home visit stimulation of verbal interaction in the mother-child dyads. Permanently assigned toys and books were used. The home visitors were called "toy demonstrators." They actually were social case workers in 1967 and nonprofessionals supervised by social case workers from 1968 through 1971. The cognitive instruments used were the Stanford-Binet Intelligence Scale and Peabody Picture Vocabularly Test. Noncognitive measures were developed for the project, and analysis was made by t-tests.
Findings: The short-term cognitive effectiveness of the program has shown a significant 17-point gain in IQ after 1 year of the intervention with professional interveners and 2 years with nonprofessionals. Noncognitive data are not yet complete for short-term effects. Preliminary follow-up data indicate a stability of cognitive gains for 2-year exposure, differences in favor of the original 1-year experimental group on reaching first grade, and grade level academic achievement for this group on the Wide Range Achievement Test.
Duration: July 1967-August 1973.
Cooperating group(s): Children's Bureau, Office of Child Development, U. S. Department of Health, Education, and Welfare; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Grant Foundation.
Publications: Levenstein, P., and Sunley, R. Stimulation of verbal interaction between disadvantaged mothers and children. *American Journal of Orthopsychiatry*, 1968, 38, 116-121; Levenstein, P., and Levenstein, S. Fostering learning potential in preschoolers. *Social Casework*, 1971, 52, 74-78; Levenstein, P. Learning through (and from) mothers. *Childhood Education*, 1971, 48, 130-134.

SPECIAL GROUPS OF CHILDREN

Physically Handicapped

30-GA-1 EVALUATION STUDY OF READING AND ACADEMIC ACHIEVEMENT LEVELS OF 15 GRADUATING CLASSES OF THE CALIFORNIA SCHOOL FOR THE DEAF AT RIVERSIDE

Investigator(s): Richard G. Brill, Ed.D., Superintendent, California School for the Deaf, 3044 Horace Street, Riverside, California 92506; and Irving H. Balow, Ph.D., Acting Dean, School of Education, University of California at Riverside, Riverside, California 92502.
Purpose: To analyze the academic achievement and reading levels of deaf children by chronological ages in order to compare various groups.
Subjects: 535 graduates of the California School for the Deaf, Riverside, who graduated from 1956 through 1971.
Methods: Standardized achievement scores are available for all graduates for each year of enrollment from about 13 years of age through the senior year. Intelligence test scores are also available, and the college grade point average of those who were admitted to college have been obtained. The groups of students to be compared will include graduating classes, college enrollees, junior college enrollees, those with preschool training, and those with deaf parents. The data on each subject will be statistically treated to determine the similarities and differences in groups.
Duration: September 1971-May 1972.
Cooperating group(s): California Department of Education.

30-GA-2 THE INTEGRATION OF PHYSICALLY HANDICAPPED CHILDREN IN ORDINARY PRIMARY SCHOOLS

Investigator(s): Elizabeth M. Anderson, M.A., Research Officer, Department of Child Development, Centre for Advanced Studies and Research, Institute of Education, London University, 55-58 Gordon Square, London, England.
Purpose: To discover whether physically handicapped children in ordinary schools are satisfactorily placed, to investigate some of the variables affecting their success, and to discover the extent to which it is possible and desirable for more physically handicapped children to be educated in ordinary schools.
Subjects: 75 boys and girls, ages 7 to 10, with a variety of physical handicaps of varying degrees of severity (including cerebral palsy, congenital anomalies, and hemophilia), who are placed individually in ordinary schools; and 25 children with severe handicaps only, ages 5 to 7.
Methods: In the first study, a control group of 150 nonhandicapped classmates, who are matched for age and sex, will be compared with the handicapped children on a variety of measures relating to academic success and social adjustment. Group and individual testing will be conducted teachers and parents will be interviewed, and behavior questionnaires will be administered. The second group of subjects will be involved in a survey type study.

Findings: Preliminary results indicate that no differences exist between controls and the physically handicapped children without brain damage, but significant differences (largely because of intelligence differences) do exist between children with brain damage and all others.
Duration: August 1969-November 1972.
Cooperating group(s): National Fund for Research into Crippling Diseases.

30-GB-1 CHROMIUM LEVELS OF NORMAL AND DIABETIC CHILDREN

Investigator(s): Richard A. Guthrie, M.D., Associate Professor, Department of Pediatrics, School of Medicine, University of Missouri, Columbia, Missouri 65201.
Purpose: To determine if chromium is a factor in the etiology of diabetes in children, and to see if chromium levels are different in normal and diabetic children.
Subjects: Three groups of children: (1) a control group of approximately 25 normal boys and girls, (2) a group of children with overt diabetes, and (3) children with chemical diabetes. Children ranged in age from 5 to 17.
Methods: The control children, who have no family history of diabetes, were used to establish normal chromium values in children of all age groups. The children with overt diabetes were compared with the controls, and the children with chemical diabetes were used to determine if chromium is a factor in the development of diabetes. All children received an oral and intravenous glucose tolerance test. Venous blood was collected through aluminum needles into silicone coated syringes to avoid chromium contamination. Serum was processed in similar vials and sealed in chromium-free quartz vials for atomic activation analysis in a nuclear reactor. Following activation, the chromium was separated by radio chemical separation and the activity counted.
Findings: Norms have been established for chromium levels. Serum chromium increases from less than 1 nanogram/ml to 5.15 ng/ml after oral glucose. Some diabetics have a delay in this secretion with lower levels.
Duration: January 1968-December 1971.
Cooperating group(s): University of Missouri Nuclear Reactor group.

30-GC-1 EVALUATION OF AUDITORY DURATION, INTENSITY, AND PITCH IN CEREBRAL PALSIED CHILDREN

Investigator(s): Wesley L. Faires, Ph.D., Assistant Professor, Department of Logopedics, Wichita State University, Wichita, Kansas 67219.
Purpose: To assess children's ability to process the basic components of speech, in order to later investigate their ability to process speech and language as it relates to their ability to discriminate duration, intensity, and pitch.
Subjects: 40 cerebral palsied children, ages 5 to 15, divided into four groups: athetoids with hearing loss, athetoids without hearing loss, spastics with hearing loss, and spastics without hearing loss.
Methods: Instrumentation will consist of a pure frequency generator connected to an electronic switch that will be controlled by a Grason-Stadler Modular Programming System. The subject will be presented with two sounds and will try to discriminate their duration, intensity, and pitch. The implication is that brain damage as it occurs in cerebral palsy affects one or more levels of information processing and results in various speech and language deficits.
Duration: September 1971-June 1972.

30-GC-2 CORRELATIVE EDUCATION: LIMITED HEARING CHILDREN

Investigator(s): Gwenyth R. Vaughn, Ph.D., Chief, Audiology, Speech Pathology Service, Veterans Administration Hospital, Rt. #11, Box 499, 71N, Birmingham, Albama 35210; and Ted A. Fuller, M.A., Principal, Speech and Hearing Center, Birmingham Public Schools, 2801 Clairmont Avenue, South, Birmingham, Alabama 35233.
Purpose: To improve the education of deaf and hard of hearing children through innovative, exemplary, and adaptive procedures within the existing educational facilities for the normally hearing.
Subjects: Approximately 75 deaf and hard of hearing boys and girls, ages 18 months to 15 years; and their normally hearing classmates.
Methods: Each subject will act as his own control as well as part of a control group. The approaches employed will include behavior modification, experimental learning, prescriptive teaching, and language learning through problem solving.
Duration: June 1969-May 1972.

30-GC-3 HABILITATION OF THE CLEFT PALATE INDIVIDUAL

Investigator(s): Kenneth L. Pickrell, M.D., Professor, Department of Plastic Surgery; Edward Clifford, Ph.D., Associate Professor, Department of Psychiatry; Galen W. Quinn, D.D.S., M.S., Professor, Department of Orthodontics; and Raymond Massengill, Ed.D., Associate Professor, Department of Medical Speech Pathology, Medical Center, Duke University, Durham, North Carolina 27710.
Purpose: To determine the effects of treatment regimes on the habilitation process of the cleft palate individual, and to determine the effects of cleft lip palate on the individual and his parents.
Subjects: Individuals of all ages from North Carolina and other southeastern states.
Methods: Data will be collected through the assessment of surgical procedures, orthodontic treatment, audiological status, speech and articulation, and psychological status of the individual. A variety of radiographic techniques, orthodontic measurements, audiograms, speech articulation measures, and interview materials will be used. Control subjects will include both normal children and children with other anomalies.
Duration: 1965-1974.
Cooperating group(s): National Institute of Dental Research, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-GC-4 MODIFICATION OF SIGN LANGUAGE FOR DEAF PRESCHOOL CHILDREN

Investigator(s): Harry Bornstein, Ph.D., Director, Office of Institutional Research, Gallaudet College, Seventh and Florida Avenue, N.E., Washington, D. C. 20002.
Purpose: To develop and evaluate a communication method that will facilitate the English language development of the deaf preschool child.
Subjects: 100 to 200 deaf preschool children, ages 2 to 5.
Methods: An experimental group will be compared to control groups that use other communication methods. Videotape language samples will be analyzed and subjected to an analysis of variance.
Duration: January 1971-December 1975.

30-GC-5 THE USE OF THE FROSTIG PROGRAM FOR THE DEVELOPMENT OF VISUAL PERCEPTION WITH CHILDREN ATTENDING A RESIDENTIAL SPECIAL SCHOOL

Investigator(s): Peter D. Pumfrey, M.Ed., Lecturer, Department of Education, University of Manchester, Manchester, M13 9PL, England; and D. A. S. Anthony, D.A.S.E., Headmaster, Children's Convalescent Home School, Manchester, England.
Purpose: To study the effects of different educational treatments on the development of visual perception and reading of physically handicapped children.
Subjects: 12 boys and 12 girls, ages 5 1/2 to 7 1/2, who attend a residential special school for the physically handicapped and who have perceptual difficulties.
Methods: The children were randomly assigned to three treatment groups: in Treatment A, children were prescribed work from the Frostig Training Program based on their greatest perceptual weakness; in Treatment B, children worked with the same material, but without differential treatment; in Treatment C, children did not use any Frostig material.
Findings: Treatments A and B were found to produce significantly greater gains on the Developmental Test of Visual Perception than did Treatment C. No significant differences were found between the mean gains of groups receiving Treatments A and B. Preliminary examination of reading test scores indicates no differences among the groups.
Duration: August 1970-July 1971.

30-GC-6 THE DEVELOPMENT OF COMMUNICATION SKILLS IN DEAF AND HEARING CHILDREN

Investigator(s): Harry W. Hoemann, Ph.D., Assistant Professor, Department of Psychology, Bowling Green State University, Bowling Green, Ohio 43403.
Purpose: To investigate deaf children's peer communication by pantomime and the American Sign Language, and to relate this behavior to their social and cognitive development in general.
Subjects: School age children and adults.
Methods: The size of the sign language lexicon available to deaf children at various age levels will be sampled in specific content areas. Communication accuracy in peer-to-peer communication will be evaluated as a function of specific referent variables. Spontaneous communications in natural settings will be studied, such as descriptions of events, giving directions or instructions, relating information, or explaining mechanical or scientific principles. An examination will be made of the extent to which sign language communication can be improved as a function of modifications in the gestures used as symbols.
Duration: September 1970-August 1973.
Cooperating group(s): National Institute of Neurological Diseases and Stroke, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-GE-1 RELAXATION TRAINING AS FACILITATED BY BIOFEEDBACK APPARATUS AS A SUPPLEMENTAL TREATMENT FOR BRONCHIAL ASTHMA

Investigator(s): Margaret H. Davis, Ph.D., Clinical Research Psychologist, Children's Asthma Research Institute and Hospital, 3401 West Nineteenth Avenue, Denver, Colorado 80204.

Purpose: To investigate the effectiveness of biofeedback assisted relaxation training as a treatment for bronchial asthma, and to investigate the effects of asthma severity and age level as they interact with treatment effect.
Subjects: 24 boys and girls, ages 6 to 16, all of whom have intractable bronchial asthma.
Methods: The children were divided into three groups: Group 1 received relaxation training with biofeedback; Group 2 received routine Jacobsonian relaxation training without feedback; and Group 3, a control group, was simply told to relax. Pre- and post-treatment peak flow rates were measured and recorded for each subject. Data were analyzed by an analysis of variance.
Findings: It was found that mild asthmatics responded to treatment, while more severe asthmatics did not. Biofeedback was found to increase routine relaxation training significantly. Age made no difference in the response to treatment. More severe asthmatics were found to reflect more positive affect than milder asthmatics.
Duration: September 1971-December 1971.

30-GF-1 PROJECT PARENT-CHILD

Investigator(s): Jerome G. Alpiner, Ph.D., Chairman; and Carol Amon, M.A., Supervisor, Children's Rehabilitative Audiology, Department of Speech Pathology and Audiology, Speech and Hearing Center, University of Denver, 2065 South York, Denver, Colorado 80210.
Purpose: To train parents to provide auditory and language stimulation to their hearing impaired infants, to compile diagnostic and evaluative information on the infants to serve as model case studies for dissemination, to develop a correspondence course for the parents, to compare the effectiveness of direct clinical contact and a home correspondence program, and to stimulate greater awareness and understanding of the management of the infants in professionals who deal with deafness.
Subjects: 60 children with impaired hearing, ages birth to 36 months; and their parents.
Methods: Correlations will be made on case study information including measurable language growth, age of onset, lapse time, etiology and pathology, frequency of clinical contact, parent activism, sibling contact, sex, social development, motor development, and mental ability. Evaluations will also be made by videotape recordings and related scoring procedures.
Duration: July 1971-June 1974.
Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare.

Mentally Retarded

30-HE-1 TESTING VARIOUS ASPECTS OF THE FULLER READING SYSTEM

Investigator(s): Renee Fuller, Ph.D., Chief, Psychological Services; Joyce B. Shuman; Anthony D. Lutkus; Elizabeth J. Noyes; and Judith A. Schmell, Rosewood State Hospital, Owings Mills, Maryland 21117.
Purpose: To determine the beneficial effects of the Fuller Reading System on learning disorders.
Subjects: Four females, 13 males, ages 11 to 50, IQs from 33 to 68, with various types of learning disorders.
Methods: The Wide Range Achievement Test, daily rating sheets, a comprehension test (subjects read a new passage consisting of the vocabulary used in books they had

just read), and comprehension questions were used to test the subjects' reading ability. Before and after each book of the series was read, the subjects were given word recognition lists, word recognition in context lists, and vocabulary definitions.
Findings: Subjects have progressed three grade levels within 1 year for all the types of learning disorders to date
Duration: January 1970-continuing.
Publications: Film: *Ball-and-stick bird reading*, 30 minutes, 16 mm., color. Presented at Liege, Belgium, Congress of Applied Psychology, 1971.

30-HG-1 INFLUENCE OF VITAMIN A ON IMMUNOGLOBULIN BIOSYNTHESIS

Investigator(s): Martin D. Appleton, Ph.D., Professor; and W. Haab, Ph.D., Professor, Department of Chemistry, University of Scranton, Scranton, Pennsylvania 18510.
Purpose: To assess the influence of Vitamin A on immunoglobulin biosynthesis on children with Down's Syndrome.
Subjects: 30 mongoloids and 30 control subjects, matched for age and sex.
Methods: The oral ingestion of Vitamin A and Vitamin A with bile salts will be controlled. Data will be collected on daily dosage, monthly blood evaluations of immune protein fractions of gamma globulin, and Vitamin A levels.
Duration: June 1971-January 1972.
Cooperating group(s): Scranton Area Foundation.

30-HH-1 A PARENTAL TEACHING STYLE ASSESSMENT SCALE: RELIABILITY AND VALIDITY

Investigator(s): Cordelia Robinson, Ph.D., Research Associate; and John Filler, M.A., Box 163, George Peabody College for Teachers, Nashville, Tennessee 37203.
Purpose: To assess the reliability of a parental teaching style scale designed to index the extent to which parents of delayed children use specific principles of behavior modification appropriately in structured teaching situations.
Subjects: Five boys and four girls with developmental delays, ages 22 to 37 months; and their mothers.
Methods: The mother-child dyads were videotaped twice at 3-month intervals. The mothers were asked to teach their children two tasks in a standardized situation. The videotapes were rated by two observers using the parental teaching style instrument, which includes categories of antecedent events; directions, demonstrations, and prompts given by the mother; subsequent verbal or physical events that are potentially reinforcing; and child behaviors including both correct and incorrect approximations or terminal responses. Data were analyzed for the percentage of total behavior accounted for by each of the categories of behavior.
Findings: Overall interrater reliability was 71.5 percent. The range reliabilities for the 15 categories of behavior was .59 to 1.00. Mean frequencies indicated that mothers emitted verbal behavior more frequently than physical behavior in both antecedent and subsequent event categories.
Duration: June 1971-September 1971.
Cooperating group(s): Toddler Research and Intervention Project.

30-HJ-1 ADAPTIVE BEHAVIOR CHECKLIST (ABCL) AS AN EVALUATIVE TOOL FOR THE EFFICACY OF THE HOSPITAL IMPROVEMENT PROGRAM

Investigator(s): Arnold D. Cortazzo, Ed.D., Superintendent, Sunland Training Center at Miami, Box 678, Opa Locka, Florida 33054; Robert M. Allen, Ph.D., Professor, Department of Psychology and Department of Pediatrics; and Barry Schwartz, M.S., Research Assistant, University of Miami, Coral Gables, Florida 33124.
Purpose: To assess the improvement of retarded children and adults under new programs and services at a training center for the retarded.
Subjects: 665 retarded subjects at the Sunland Training Center at Miami, Florida; and approximately 200 retarded control subjects from two similar training centers in Florida.
Methods: A first evaluation was made of all residents at the Sunland Training Center who were assigned to one of four divisions. The subjects were reevaluated during the second and third year of the study. The control group subjects, who were not organized into divisions, were matched with the experimental group subjects. The controls were evaluated and reevaluated using the Adaptive Behavior Checklist (ABCL).
Findings: The data indicate that (1) the divisional concept is an efficient organizational structure, and (2) the ABCL is an efficient evaluative tool.
Duration: May 1969-June 1972.
Cooperating group(s): Sunland Training Center, Fort Myers, Florida; Sunland Training Center, Marianna, Florida.

Gifted

30-IA-1 TALENTS AND COMPETENCIES

Investigator(s): Ellen Greenberger, Ph.D., Senior Research Scientist, Center for Social Organization of Schools, Johns Hopkins University, 3505 North Charles Street, Baltimore, Maryland 21218.
Purpose: To identify and measure a wide range of academic and nonacademic performances of children; to analyze variations in performance because of variations in personal, family, school, and peer environments; to suggest interventions to develop talented performance; and to create a theory of talented performance.
Subjects: Large samples (6,000) and small samples (200) of children, grades 3 to 11, from all social classes.
Methods: A longitudinal study will be made of psychosocial maturity and its relationship to family and school variations. The effect of peer environment on the children's development will be studied through the administration of attitude questionnaires, the collection of family background and school data, and a determination of the peer environment.
Duration: 1970-1974.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-IA-2 INTELLECTUAL/PERSONALITY DEVELOPMENT OF GIFTED CHILDREN

Investigator(s): Jon C. Jacobs, Ph.D., Psychologist, Plymouth Community Schools, 1024 South Mill, Plymouth, Michigan 48170.
Purpose: To study the development of personality and the use of intellect in children with superior ability during early school years.

Subjects: 20 children with IQ scores exceeding 125 (Wechsler Intelligence Scale for Children), followed from prekindergarten (age 4) through grade 3 (age 9).
Methods: Approximately 600 children in the chosen population were individually tested for intelligence, rather than relying on noneffective screening methods (e.g., teacher nomination, group testing).
Findings: The subjects show significant measured IQ loss on entrance to school and are able to recoup this loss in several years only under specialized conditions.
Duration: July 1968-June 1972.

Emotionally Disturbed and Mentally Ill

30-JA-1 VALIDITY OF A PSYCHODIAGNOSTIC MODEL FOR CHILDREN

Investigator(s): Luciano L'Abate, Ph.D., Professor, Department of Psychology, Georgia State University, 33 Gilmer Street, S.E., Atlanta, Georgia 30303.
Purpose: To verify a psychodiagnostic model for children based on an information communication framework.
Subjects: 400 children from schools, clinics, hospitals, and private references.
Methods: Standard test batteries will be used to assess four areas: verbal skills, visual-motor problem solving, educational achievement, and emotional maturity.
Findings: Some validity of the model has been found for brain damaged children.
Duration: July 1963-continuing.
Cooperating group(s): Department of Pediatrics, Emory University.

30-JA-2 "SUPERSHRINK"—METHODS OF A PSYCHOTHERAPIST JUDGED UNUSUALLY HELPFUL ON THE BASIS OF ADULT OUTCOMES OF ADOLESCENT PATIENTS

Investigator(s): David F. Ricks, Ph.D., Professor, Department of Clinical Psychology, Teachers College, Columbia University, New York, New York 10027.
Purpose: To identify the methods employed by a therapist who is successful in treating severely disturbed adolescents.
Subjects: Male patients with severe disturbances, ages early to midadolescence, for whom adult outcomes could be discovered. The patients were seen by one particularly successful therapist. Members of a control group were seen by other therapists.
Methods: One therapist proved to be significantly more often represented by adolescents who turned out in a socially adjusted control group, and less often by schizophrenics, than comparable therapists working with comparable patients. A study will be made of the therapist's notes and the characteristics of his patients, including their age, the problems that brought them to the clinic, and any indications of organic deficit. An attempt will be made to find the reasons for the therapist's successful effects.
Findings: No differences were found between the therapist's subjects and the other subjects. His methods are at least partly open to description, since the clinic in which he worked has a tradition of very full therapy notes.
Duration: 1965-1972.

Cooperating group(s): Judge Baker Guidance Center, Boston; Scottish Rite Fund for Research in Schizophrenia; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.
Publications: David R. Ricks, Alexander Thomas, and Merrill Roff (Eds.). *Life history research in psychopathology*. Minneapolis: University of Minnesota Press (in press).

30-JA-3 EDUCATIONAL PROGRAMS FOR SERIOUSLY EMOTIONALLY DISTURBED CHILDREN IN CALIFORNIA

Investigator(s): Charlotte D. Elmott, Ed.D., Bureau of Educational Research and Development, Phelps Hall, Room 2206, University of California at Santa Barbara, Santa Barbara, California 93106.
Purpose: To determine the unmet needs in the educationally handicapped programs for children in California.
Subjects: All children now in educationally handicapped programs in California plus those not in programs who are seriously disturbed.
Methods: Questionnaires will be distributed to all school districts in California and analyzed for needs in the emotionally handicapped programs. School visitations will be made, and a literature search will be conducted.
Duration: October 1971-June 1972.
Cooperating group(s): California State Department of Education.

30-JB-1 UNUSUAL READING ABILITY IN SEVERELY DISTURBED CHILDREN

Investigator(s): Leonard Cobrinik, Ph.D., Associate Research Scientist, Queens Children's Hospital, 74-03 Commonwealth Boulevard, Bellerose, New York 11426.
Purpose: To analyze the nature and organization of unusual reading abilities in severely disturbed children, and to study the developmental factors and the current perceptual functioning of these children.
Subjects: Approximately six severely disturbed children, matched with a control group of functioning schizophrenic children.
Methods: The groups are compared on a variety of perceptual tasks involving words.
Findings: Severely disturbed children appear to organize reading through total word-pattern recognition, rather than through analyses of parts.
Duration: August 1971-June 1972.

30-JC-1 CONTROL OF HYPERACTIVE BEHAVIOR IN CHILDREN THROUGH ATTENTION TRAINING AND REGULATION OF RESPIRATORY BEHAVIOR

Investigator(s): D. Dwayne Simpson, Ph.D., Assistant Professor, Institute of Behavioral Research, Texas Christian University, Fort Worth, Texas 76129.
Purpose: To develop a method to control children's overt hyperactive behavior through attention training and regulation of respiratory behavior.

Subjects: Six boys, ages 6 to 8, enrolled in a school for children with learning disabilities. The children have average or above average IQ scores. Some subjects are on drugs for hyperactivity, although drug use is not under experimental control in this study. Three boys are experimental subjects and three boys are control subjects.
Methods: An operant conditioning paradigm is being used with three experimental subjects to shape overt behavior, using respiration tracings (recorded via telemetry equipment) as the contingency. Using token rewards of candy and money, training in behavior control began with respiration feedback as part of a tracking task on an individual basis and is now generalized to the classroom setting on a group basis. The three control subjects are given similar treatment but do not operate on the same reward contingency as the experimental subjects. Pre- and postexperimental measures of attention and performance are collected, including several subscales of the Wechsler Intelligence Scale for Children. Measures of respiratory behavior and performance and behavior ratings by classroom teachers are also collected.
Duration: July 1971-June 1972.
Cooperating group(s): Starpoint School, Texas Christian University; Office of Education, U. S. Department of Health, Education, and Welfare.
Publications: A report is available from the investigator.

30-JC-2 HOME CARE—HOSPITAL CARE STUDY

Investigator(s): B. Winsberg, M.D., M.S., Director of Research, Child Psychiatric Research Unit, New York State Department of Mental Hygiene, Brooklyn, New York 11203. Brooklyn, New York 11203.
Purpose: To determine the relative effects of home and hospital care on neuropsychiatrically impaired children.
Subjects: 60 boys and girls, ages 6 to 12, who are judged in need of state hospitalization.
Methods: The children are randomly assigned to one of two treatment groups (home or hospital). The relative effects of the treatment are assessed on dependent measures including behavioral change in children and their siblings, parental psychopathology, achievement test scores, and the acquisition of classroom socialization skills through attending the two treatment programs.
Duration: March 1970-March 1973.
Cooperating group(s): New York State Hospital System; Kings County Hospital and Downstate Medical Center; New York Public School System, Brooklyn.

30-JC-3 SUICIDE AMONG YOUTHS IN ISRAEL

Investigator(s): Menachem Amir, Ph.D., Senior Lecturer, Institute of Criminology, Tel Aviv University, Tel Aviv, Israel.
Purpose: To study the patterns of suicide among Israeli youths.
Subjects: 358 cases of suicide, 268 females and 90 males: all reported cases of suicide among Israeli youths, ages 7 to 18 years, from 1963 to 1966.
Methods: In the first stage of the study, a survey will be conducted to analyze demographic, social, and personality characteristics, and the motives and methods of suicide. Family and immigrant background data will be included.
Duration: September 1970-September 1972.
Cooperating group(s): Ministry of Social Welfare, Jerusalem, Israel.

30-JC-4 BEHAVIORAL MODIFICATION OF ACTING-OUT BEHAVIORS IN ADOLESCENCE

Investigator(s): Moss A. Jackson, Ph.D., Clinical Psychologist, Pathway School, Box 18, Audubon, Pennsylvania 19407.
Purpose: To explore the effectiveness of a token reinforcement program to teach adolescent boys with learning disabilities more appropriate social skills and problem solving competencies.
Subjects: 14 emotionally disturbed boys, ages 10 to 13 (average age, 12-5), with IQs ranging from 74 to 126 (average IQ, 95.4). All boys had emotional difficulties ranging from preneurotic to borderline adjustment. The primary diagnosis was CNS dysfunction manifested in learning disabilities. Eight boys had a prior history of chronic acting-out.
Methods: Daily behavioral records on self-control, personal care, cottage responsibility, classroom behavior, and individual problems were maintained for each boy. Subjects were informed each day of their behavioral progress and current earnings of tokens. Rewards could be purchased twice a week. Data were analyzed over an 8-month period with nonparametric statistics.
Findings: Significantly positive differences were found between baseline and experimental (token reward) phases in all five areas. In general, the boys became less socially isolated, detached, and aggressive. Concomitantly, they displayed more socially cooperative and appropriate behavior towards adults and peers. Behavioral progress has been maintained for the boys whose tokens are gradually being phased out.
Duration: April 1971-September 1973.

30-JE-1 AFFECTIVE DISORDERS OF CHILDHOOD

Investigator(s): Leon Cytryn, M.D., Research Associate, Children's Hospital of the District of Columbia, Washington, D.C. 20009.
Purpose: To delineate clinical types of childhood depression and hypomania, and to study biochemical correlates of affective disorders of childhood.
Subjects: 36 children, ages 6 to 12.
Methods: Following a screening evaluation, the subjects are admitted to a research ward. The children's behavior is rated on a specially constructed rating scale. Their urine is collected and examined for various chemicals.
Duration: 1969-1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-JE-2 PARENTAL UNDERSTANDING OF THEIR AUTISTIC CHILD

Investigator(s): Eric Schopler, Ph.D., Associate Professor, Department of Psychiatry and Department of Psychology; and Robert J. Reichler, M.D., Assistant Professor, Department of Psychiatry, School of Medicine, University of North Carolina, Chapel Hill, North Carolina 27514.
Purpose: To investigate how well parents are able to evaluate their autistic child's level of development in language, motor, mental, and social functions.
Subjects: 92 parents (ages 24 to 61) of autistic or psychotic children, ages 1 1/2 to 12: 31 boys and 16 girls.

Methods: At the beginning of the evaluation, each parent was asked to complete a form which asked them to estimate their child's level of development in six areas: overall development, language, motor function, social skills, self-sufficiency, and mental development. The estimates were compared with objective test measures from the Vineland Social Maturity Scales and standard intelligence tests.
Findings: Correlations were quite high, indicating that parents are able to assess their child's level of functioning quite accurately.
Duration: July 1970-spring 1972.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-JF-1 BEHAVIORAL CHARACTERISTICS OF FOSTER CHILDREN BORN OF SCHIZOPHRENIC MOTHERS

Investigator(s): J. M. Cleghorn, M.D., C.M., Associate Professor; D. J. MacCrimmon, M.D., C.M., Lecturer; and D. L. Streiner, Ph.D., Assistant Professor, Department of Psychiatry, McMaster University, Hamilton, Ontario, Canada.
Purpose: To reexamine some tentatively identified behavioral predictors of serious psychopathology in children.
Subjects: Two groups of seven foster children (four females and three males in each group), ages 12 to 16 (mean age, 14), placed in foster homes from 1 to 16 years (average placement, 7.5 years; average school years completed, 6.5).
Methods: Two groups of foster children were selected and matched for age, sex, race, and religion at foster placement. The index cases have biological mothers with documented schizophrenia, and the control cases have biological parents with no history of admission to a mental hospital within Ontario. The subjects were seen in a random order by an interviewer, blind as to groups. The assessment measures used included the Psychiatric Status Schedule (PSS), the subject and informant form (Spitzer); the Competing Voice Messages Task of Rapport; a weight discrimination threshold task; and the Minnesota Multiphasic Personality Inventory (MMPI).
Findings: By a prediction based on the PSS data, the interviewer correctly assigned 13 out of 14 cases to the correct group, and the index group reported significantly more symptoms than the control group. The index group also made significantly more errors on the voice task, and showed a trend of having higher scores on the MMPI. The weight discrimination task was not significantly different for the two groups.
Duration: April 1971-March 1973.
Cooperating group(s): Ontario Mental Health Foundation; Childrens Aid Society of Hamilton-Wentworth; Catholic Childrens Aid Society of Hamilton-Wentworth.

30-JG-1 MOTHERS AND PEERS AS CHILD BEHAVIOR THERAPISTS

Investigator(s): Paul W. Clement, Ph.D., Director, Child Development Center, Fuller Graduate School of Psychology, 190 North Oakland, Pasadena, California 91101.
Purpose: To develop and test more effective ways of treating shy, withdrawn children in groups.
Subjects: 26 boys and girls, ages 7 to 9, all of whom had been referred by their schools for being shy and withdrawn in the school setting.

Methods: Three types of therapy groups were conducted: (1) mothers took turns treating their own child and three others in a group context, (2) children took turns treating each other, and (3) mothers were trained to treat their children at home, but the children were not seen in the clinic. A two-factor analysis of covariance was used. The peer therapist, mother therapists, mother training groups, and control groups constituted the four levels of the first factor; and the time of evaluation of process or outcome variables was the second factor. The children's behavior was observed and scored at each therapy session. Personality inventories were completed by the children, behavior rating scales and personality inventories were completed by the parents, and behavior rating scales were completed by the children's teachers.
Duration: January 1971-April 1972.
Cooperating group(s): Pasadena School District; Glendale School District; San Marino School District.

30-JH-1 PHYSIOLOGICAL STUDIES OF HYPERKINETIC CHILDREN

Investigator(s): James H. Satterfield, M.D., Director of Research, Andrew Norman Research Center, Hyperkinetic Clinic, Gateways Hospital, 1891 Effie Street, Los Angeles, California 90026.
Purpose: To conduct combined laboratory and clinical studies of hyperkinesis in children.
Subjects: 100 boys, ages 6 to 9.
Methods: A normal control group was studied which matched the experimental subjects on age and sex. Laboratory measures included electroencephalogram, evoked cortical response, and galvanic skin response. The clinical procedures included a double-blind methylphenidate/placebo evaluation. The experimental and control subjects were compared on the basis of physiological and psychological measures, including response to the stimulant drug treatment. Pre- and posttreatment ratings were obtained through structured interviews with the parents and from pre- and posttreatment teacher rating scales.
Findings: Results indicate that hyperkinetic children have a higher skin conductance measure than do normal control children. The clinical response to methylphenidate is better than the response to the placebo.
Duration: June 1969-June 1972.
Publications: Satterfield, J. H. and Dawson, M. E. Electrodermal correlates of hyperactivity in children. *Psychophysiology*, 1971, 8(2), 191-197; Satterfield, J. H. GSR, EEG, and auditory evoked response correlates to response to stimulant medication in hyperactive children. *Psychophysiology*, March 1971, 8; Satterfield, J. H. EEG studies of the hyperkinetic child. *Psychopharmacological Bulletin*, July 1971, 7(3); Satterfield, J. H. Physiological studies of the hyperkinetic child. *American Journal of Psychiatry* (in press).

Socially Deviant

30-KA-1 MOTHERS AND EXPECTANT MOTHERS

Investigator(s): Eugene Aronowitz, Ph.D., Associate Director, Boston Children's Service Association, 3 Walnut Street, Boston, Massachusetts 02108.
Purpose: To determine the relationships among the backgrounds, perceptions, and attitudes of single expectant mothers; the services provided to them; the decisions they

make regarding their babies; and for those who keep their babies, their attitudes and approaches towards childrearing.
Subjects: Approximately 400 single expectant mothers who are provided services at Boston Children's Service Association during 1972; a comparison group of married expectant mothers; and a comparison group of women who plan to abort.
Methods: Data will be collected through a questionnaire on the respondent's background and perception of her parents. Attitudes will be determined through a semantic differential. These data will be collected during the client's second interview, immediately after the termination of pregnancy; and for those who keep their babies, 1 year after pregnancy. Data will be collected on the social services provided the expectant mother.
Duration: January 1972-December 1973.

Juvenile Delinquency

30-KC-1 SHORT-TERM SMALL GROUP HOME FOR FEMALE YOUTHS COMMITTED TO THE STATE AND REGION III SMALL GROUP HOMES PROJECT

Investigator(s): Robert Walus, B.A., Public Welfare Administrator, Research and Program Analysis, Michigan State Department of Social Services, 300 South Capitol Avenue, Lansing, Michigan 48913.
Purpose: To determine whether placement in a small group home setting is beneficial to female delinquents.
Subjects: Female delinquents, ages 12 to 17, who are committed to the state and assigned to one of five homes in the project.
Methods: The subject's behavior is observed prior to placement in the home, during placement, and for 1 year after release. A second group of girls from the Girls Training School will also be followed for 1 year. Data are taken from case records, observation of house parents and caseworkers, and records of the follow-up caseworker.
Duration: January 1971-June 1972.
Cooperating group(s): Law Enforcement Assistance Administration, U. S. Department of Justice; Office of Youth Services, State of Michigan.

30-KD-1 A DESCRIPTION AND EVALUATION OF THE EDUCATIONAL AND THERAPEUTIC IMPACT OF THE CLASSROOM SETTING IN A DAY TREATMENT FACILITY FOR DELINQUENT BOYS

Investigator(s): David E. Brandt, Ph.D., Research Psychologist; Louise Espy, B.A., Research Assistant; and Agnes Jaffe, B.A., Research Assistant, Phoenix School, 333 West 86th Street, New York, New York 10024.
Purpose: To describe and evaluate the effectiveness of classroom intervention as a major modality in helping a population of delinquent adolescent boys reach some level of independent functioning, to develop relevant data systems to aid in educational and treatment planning and to provide for systematic program modification and development.
Subjects: 17 boys, ages 14 to 16, who have been adjudicated delinquent by the court and placed at the Phoenix school as an alternative to residential placement. All boys have

experienced serious behavioral and academic difficulties in prior school settings.
Methods: Data on subjects' attitudes towards school, personality characteristics, achievement level, and classroom behavior will be taken at the beginning and end of the academic year. This data will be collected by means of standardized tests (including the Jesness Inventory and the Metropolitan Achievement Test), rating scales, and interviews with the staff. Daily records of the boys' work and behavior in class will also be included. Direct observation of classroom activities will be made on a systematic basis, using the Bales Interaction Matrix as a framework for these observations.
Findings: Classroom observations have demonstrated that a significant amount of classroom time can be devoted to teaching rather than dealing with behavior problems. The boys' responses and attitudes towards educational material was found to be generally positive. Their responses to staff attempts to deal with behavior problems was usually negative.
Duration: August 1971-August 1972.

30-KF-1 EVALUATION OF NATIONAL YOUTH PROJECT USING MINIBIKES (NYPUM)

Investigator(s): Michael F. O'Connor, Ph.D., Research Associate, Public Systems Research Institute, University of Southern California, Los Angeles, California 90007.
Purpose: To design and implement a research strategy that will reflect and capture the objectives and criteria of achievement which characterize the NYPUM program.
Subjects: 1,500 members of various YMCA NYPUM programs, ages 11 to 15, both sexes, all ethnic groups, with emphasis on delinquent children.
Methods: Data are being collected by questionnaires and project visits. Comparisons will be made between this program and the Youth Development and Delinquency Prevention Program. Data will be analyzed by the scaling of multiattribute alternatives.
Duration: August 1971-July 1972.
Cooperating group(s): National Office of YMCA; California Council on Criminal Justice; Urban Action and Program Division, National Board of YMCAs.

30-KJ-1 AN INTENSIVE STUDY OF HOSPITALIZED JUVENILE DELINQUENTS

Investigator(s): Daniel Offer, M.D., Associate Director, Institute for Psychosomatic and Psychiatric Research and Training, Michael Reese Hospital, 2901 South Ellis Street, Chicago, Illinois 60616; and Richard C. Marohn, M.D., Director, Delinquent Adolescent Program, Illinois State Psychiatric Institute, 1601 West Taylor Street, Chicago, Illinois 60612.
Purpose: To determine the intrapsychic and intrafamilial causes of delinquency, to study family communication, to compare delinquent adolescents with normal adolescents studied previously, and to develop a model treatment intervention program.
Subjects: Approximately 65 delinquent boys and girls, ages 13 to 17, from intact and disrupted families. The subjects were involved in violations of the law including vandalism, assault, truancy, runaway, drug abuse, and theft.
Methods: Individual subjects are tested and interviewed extensively and compared with a group of normal adolescents who were studied previously through a self-image questionnaire and other psychological tests. The subjects will also be compared with siblings and other hospitalized adolescents through a cognitive styles study. Behavior on the hospital

ward is measured regularly to determine the extent of impulsivity and acting-out behavior. Parents are interviewed to determine their attitudes towards the delinquents.
Duration: January 1969-March 1975.
Cooperating group(s): Illinois Law Enforcement Commission; Department of Mental Health, State of Illinois.
Publications: Marohn, R.C.; Offer, D.; and Ostrov, E. Juvenile delinquents view their impulsivity. *American Journal of Psychiatry*, 1971, 128(4), 418-423.

30-KK-1 EVALUATION OF THE NATIONAL STRATEGY OF YOUTH DEVELOPMENT AND DELINQUENCY PREVENTION PROGRAMS

Investigator(s): A. W. McEachern, M.A., Director; and Edward M. Taylor, M.A., Senior Research Associate, Public Systems Research Institute, University of Southern California, Los Angeles, California 90007.
Purpose: To design and implement evaluation procedures that will assess the extent to which local delinquency prevention projects have been concerned with diversion from the juvenile justice system, institutional change, reduction of youth-adult alienation, and avoidance of bad labeling.
Subjects: Delinquent prevention projects in 23 project cities which serve youths, ages 13 to 18.
Methods: Data will primarily be collected through visits to the project sites. A multiattribute utility analysis, a technique derived from modern decision theory, will be used to assess the data.
Duration: May 1971-April 1972.
Cooperating group(s): Youth Development and Delinquency Prevention Administration, Social and Rehabilitation Service, U. S. Department of Health, Education, and Welfare.

30-KK-2 SOCIAL SERVICE INTERVENTION AND RECIDIVISM AMONG DELINQUENTS

Investigator(s): Alan R. Gruber, D.S.W., Director of Research; and Eugene Aronowitz, Ph.D., Associate Director, Boston Children's Service Association, 3 Walnut Street, Boston, Massachusetts 02108.
Purpose: To assess the effectiveness of social services in preventing recidivism among adjudicated delinquents.
Subjects: Approximately 200 male and female delinquents referred to Boston Children's Service Association between 1969 and 1971.
Methods: The study is primarily descriptive in nature. A control group of youths not referred for services will be randomly chosen and matched to the experimental group. Data will be collected from agency and court records and analyzed by multivariate analysis.
Findings: A pilot study conducted in 1971 showed a remarkable reduction in recidivism when compared with the recidivism rate of the control group.
Duration: January 1972-July 1972.

Corrections

30-KP-1 EVALUATION OF THE PAROLE ADJUSTMENT OF 244 JUVENILE BOYS EXPOSED TO THE POSITIVE PEER CULTURE PROGRAM AT THE MINNESOTA STATE TRAINING SCHOOL FOR BOYS

Investigator(s): Nathan G. Mandel, Ph.D., Director of Research; Samiha Peterson, Ph.D., Research Intern; and Linda Havir, M.A., Research Analyst, Minnesota State Department of Corrections, 310 State Office Building, St. Paul, Minnesota 55155.
Purpose: To evaluate the Positive Peer Culture Program through an analysis of juveniles' parole violations and nonviolations.
Subjects: 244 boys, ages 11 to 18, released on parole in 1969 from the Minnesota State Training School for Boys, who had committed different types of juvenile offenses.
Methods: The data drawn from parolees' records will be analyzed. The data on parole violators and nonviolators will be compared.
Duration: Fall 1971-spring 1972.
Cooperating group(s): Minnesota State Training School for Boys.

30-KP-2 NO SUPERVISION PAROLE PROJECT

Investigator(s): Joe Hudson, M.S.W., Teacher; and Nathan G. Mandel, Ph.D., Director of Research, Minnesota State Department of Corrections, 310 State Office Building, St. Paul, Minnesota 55155.
Purpose: To evaluate the differential effects of conventional parole supervision as opposed to no parole supervision for juvenile boys and girls released from juvenile correction facilities.
Subjects: 201 boys and girls, ages 13 to 18, committed to the Minnesota State Training School for Boys or the Minnesota Home School and paroled from August 1970 through May 1971.
Methods: An experimental field design involving random assignment from a sample pool was used. Data were collected through case follow-up and through a follow-up questionnaire completed by the parolee. The study attempts to discover from whom the parolees seek help as well as to evaluate the parole adjustment of the boys and girls.
Duration: June 1970-June 1972.
Cooperating group(s): Minnesota Youth Conservation Commission.

30-KP-3 POSTINSTITUTIONAL ADJUSTMENT OF 155 BOYS RELEASED ON PAROLE

Investigator(s): Bert Mohs, M.S.W., Minnesota Home School; Nathan G. Mandel, Ph.D., Director of Research; Samiha Peterson, Ph.D., Research Intern, Minnesota State Department of Corrections, 310 State Office Building, St. Paul, Minnesota 55155.
Purpose: To evaluate the Home School Program and its effect on parole adjustment.
Subjects: 155 boys, ages 11 to 14, released on parole from the Minnesota Home School from 1966 through 1970, who had committed different types of juvenile offenses.

Methods: Information derived from the parolees' files was used to compare parole violators and nonviolators. T-tests and chi-square tests were used to test the differences between the two groups.

Findings: Sixty-three percent of the boys violated parole. The factors which were significantly related to parole violation include: preinstitutional correction experience, number of disciplinary lock-ups, length of institutional stay, and intelligence level. The first 3 to 6 months of the parole were the most critical for parolees, since most violations occurred during this period.

Duration: October 1970-January 1971

THE CHILD IN THE FAMILY

Family Relations

30-LA-1 CONFLICT RESOLUTION IN CLINICAL FAMILIES

Investigator(s): N. B. Epstein, M.D., Chairman; and Jack Santa-Barbara, Ph.D., Lecturer, Division of Health Sciences, Department of Psychiatry, McMaster University, Hamilton, Ontario, Canada.
Purpose: To investigate modes of conflict behavior in clinical families and techniques for successful conflict management within families.
Subjects: Several hundred families with children, age 10 and older, including husband-wife and child-parent dyads, seen yearly at the Chedoke Child and Family Centre; and nonclinical families.
Methods: The dyads will be examined in a variety of conflict situations using mixed-motive games. The effects of various conditions on the interaction patterns of the dyads, which reach cooperative or high conflict outcomes, will be examined. The families' interaction patterns in the game situation will be related to various demographic and clinical characteristics.
Findings: Pilot data indicate that it is feasible to gather meaningful data by use of this technique with families. Families report that their behavior in the game situation captures some aspects of their everyday interactions. Clinical checklists completed by the family's therapist also indicate face validity for this technique.
Duration: 1971-1973.
Cooperating group(s): Medical Research Council of Canada.

30-LA-2 GENERATIONAL DIFFERENCES: CORRELATES AND CONSEQUENTS

Investigator(s): Vern L. Bengtson, Ph.D., Associate Professor, Department of Sociology, University of Southern California, Los Angeles, California 90007.
Purpose: To investigate the extent and nature of differences among individuals of different ages in a three-generational study of families, and to test the proposition that family solidarity and intergenerational similarity are associated with psychological well-being.
Subjects: 458 three-generational families composed of approximately 3,000 individuals.
Methods: In the first phase of the project a large scale survey will be conducted. The second phase of the study involves simulation and face-to-face interaction among family members.
Findings: Results indicate that alienation is related to generation membership curvilinearly: the young are the highest in alienation; the middle aged, lowest; and the elderly, intermediate. Individuals perceived a greater *cohort gap* than a *generation gap* within the family.
Duration: March 1970-February 1974.

Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service. U.S. Department of Health, Education and Welfare.
Publications: *Youth and Society*, 2(4), 1970; *Aging and Human Development*, 2(4), 1971; *Gerontologist*, 11(3, Part II), 1971.

30-LC-1 FAMILY ROLES STUDY

Investigator(s): Ivan Nye, Ph.D., Professor, Department of Sociology, Washington State University, Pullman, Washington 99163.
Purpose: To further delineate the concepts of family roles, measurement of roles, distribution of roles between spouses, description of roles in American society, and the relationship of role competence to marital satisfaction and spousal power.
Subjects: 210 parents (both sexes) of children in grade 3 in Yakima County, Washington.
Methods: The subjects represent a 20 percent sample of the county. Data will be collected by a questionnaire administered to the parents.
Duration: January 1970-September 1973.
Cooperating group(s): Agricultural Research Center, Washington State University.

30-LC-2 CORRELATES OF FAMILY SIZE AND CHILD SPACING IN THE UNITED STATES AND PUERTO RICO

Investigator(s): Ronald L. Nuttall, Ph.D., Institute Associate; and Ena V. Nuttall, Ed.D., Senior Research Associate, Institute of Human Sciences, Boston College, Chestnut Hill, Massachusetts 02167.
Purpose: To study how family size and child spacing affect the lives of parents and their offspring.
Subjects: Approximately 500 high school students and their parents who reside in a middle class suburb of Boston.
Methods: The variables to be studied include the parents' ages, socioeconomic status, religion, religiosity, education, work history, childrearing attitudes, recreational patterns, and finances. The families will be distributed among four groups: small families with closely spaced children, small families with widely spaced children, large families with closely spaced children, and large families with widely spaced children. Data will be collected through interviews and self-report questionnaires and will be compared to data previously collected on 5,000 Puerto Rican families.
Duration: November 1971-November 1973.
Cooperating group(s): Population Research Center, National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-LC-3 FAMILY STRUCTURE AND CHILD SOCIALIZATION IN JAPAN

Investigator(s): Edward C. Devereux, Ph.D., Professor, Department of Human Development and Family Studies, Cornell University, Ithaca, New York 14850.
Purpose: To examine the effects of changing family structure in Japan upon patterns

of childrearing, and the consequences of the effects on various child behavior outcomes.
Subjects: Approximately 800 children in grade 6, equally divided by sex, half from urban areas and half from rural areas, from various socioeconomic backgrounds.
Methods: Group administered questionnaires were given to 33 school classes. Instruments were designed to yield information on family structure, parent behavior, and a variety of child behaviors. Comparisons will be made with previous studies in the United States, England, U.S.S.R., Germany, and Israel.
Duration: February 1971-February 1973.
Cooperating group(s): Sociology Department, Tokyo University; National Science Foundation.

30-LC-4 CEBU FAMILY HEALTH PROJECT

Investigator(s): William T. Liu, Ph.D., Professor and Chairman, Department of Sociology; Arthur J. Rubel, Ph.D., Professor, Department of Anthropology, University of Notre Dame, Notre Dame, Indiana 46556; and Virginia V. Pato, M.D., Professor, Department of Microbiology, Cebu Institute of Medicine, Cebu City, Philippines.
Purpose: To assess child spacing and other variables that relate to the structure and mobility of families in Cebu City, Philippines.
Subjects: A random sample of 2,218 individuals living in the city and the barrios.
Methods: A sample interview was conducted and anthropological observations were made.
Duration: 1969-1973.
Cooperating group(s): San Carlos University, Cebu City, Philippines.

30-LC-5 ADOLESCENT DEVIANCE FROM PARENTAL EXPECTATIONS

Investigator(s): John T. Olson, M.A., Psychologist, Adolescent Treatment Center, Camarillo State Hospital, Camarillo, California 93010.
Purpose: To investigate the association of family variables (communication, integration, role allocation) with similarity of parent-adolescent preference for life style.
Subjects: Hospitalized adolescents diagnosed as having nonpsychotic behavioral reactions and normal adolescents.
Methods: Adolescents and their parents were interviewed and administered a questionnaire.
Duration: 1969-1972.
Cooperating group(s): Sociology Department, University of Southern California.

30-LC-6 CHILDREN'S DISCRIMINATION OF SIBLING ROLE CONCEPTS

Investigator(s): Jerry J. Bigner, Ph.D., Assistant Professor, Department of Home Economics, 204 Wylie Hall, Indiana University, Bloomington, Indiana 47401.
Purpose: To investigate the dimensions used by children to define sibling roles within the family.
Subjects: 260 second-born, Caucasian boys and girls, ages 5 to 13, spaced either 2 or 4 years between siblings; and 60 singleton children in the same age range.
Methods: The children will be presented with a series of paired figures, which represent

typical sibling roles within a two-child family, and will be asked to assign a power of function statement to one of these figures. Data will be analyzed by chi-square and median tests.
Duration: September 1971-May 1972.
Cooperating group(s): Monroe County Community School Corporation.

30-LG-1 THE EFFECTS OF HOSPITALIZATION ON THE FAMILIES OF HOSPITALIZED CHILDREN

Investigator(s): Hyman L. Kempler, Ph.D., Chief Psychologist, Children's Service; and Helene Lycaki, Ph.D., Postdoctoral Fellow, Psychology Division, Lafayette Clinic, 951 East Lafayette, Detroit, Michigan 48207.
Purpose: To evaluate the ways in which hospital treatment influences treated and nontreated children and their families.
Subjects: 20 families of hospitalized children and 20 familes of children treated as outpatients for various behavior and academic problems.
Methods: Both hospitalized and nonhospitalized children completed the following questionnaires and inventories: Coopersmith's Self-Esteem; Semantic Differential; Bialer's Locus of Control; Foa's Perception of Behavior in Reciprocal Roles (modified for the present study); Child's Attitudes Towards Friends; and Child's Behavior and Attitudes Towards Parents. (Children's attitudinal scales were developed for this study.) Both parents of the hospitalized child will complete Foa's Perception of Behavior in Reciprocal Roles, a separate report for each child's peer relationships, a separate report for each child's behavior towards parents, and the parent's attitude towards childrearing practics. (The reports and parent attitudinal scale were developed for the present study). The questionnaires will be administered to the parent and child at three different times: prior to the beginning of treatment, 6 weeks after the beginning of treatment, and at the end of treatment. The variables within each group and between groups will be analyzed by analysis of variance, factor analysis, path analysis, or facet analysis.
Duration: December 1971-September 1972.

30-LH-1 ANALYSIS OF 15-YEAR LONGITUDINAL DATA ON FOSTER AND ADOPTIVE CHILDREN WHO LIVED THEIR EARLY LIVES IN A SERIOUSLY DEPRIVING INSTITUTION

Investigator(s): Betty M. Flint, M.A., Associate Professor, Institute of Child Study, College of Education, University of Toronto, 45 Walmer Road, Toronto 4, Ontario, Canada.
Purpose: To analyze data collected on children's intellectual function, concept formation, affectional ties, and self-concept.
Subjects: 23 boys and 5 girls, ages 0 through 15; foster and adoptive Canadian children, who lived their early lives in a seriously depriving institution.
Methods: Data were gathered from questionnaires, home and school interviews, and psychological tests (Rorschach, Stanford-Binet Intelligence Scale, and the Wechsler Intelligence Scale for Children). The same researcher recorded data on each child throughout childhood and early adolescence, from his infancy in an institution to his placement in foster and adoptive homes.

Findings: Results indicate no overall intellectual deficit in the performance of the children. Most children in this group have developed strong affiliations with families.
Duration: 1957-1973.
Cooperating group(s): Catholic Children's Aid, Toronto; Welfare Grants Division, Department of Health and Welfare, Canada.

Childrearing

30-MB-1 MONEY MANAGEMENT EDUCATION IN THE HOME

Investigator(s): Helen C. Potter, Ph.D., Professor, Department of Home Management and Family Economics, School of Home Economics, Purdue University, Lafayette, Indiana 47907.
Purpose: To assist parents to help their children gain competence to manage money.
Subjects: 1,600 boys and girls in grades 7 through 12; and 335 parents.
Methods: The suggestions of parents and youths on practices, experiences, and attitudes that contribute to competence in money management will be pooled. Four surveys have been conducted: (1) a questionnaire for high school youths, in which 50 questions were answered by 1,331 youths; (2) a survey on money management in the home, in which 34 questions were answered by 335 parents; (3) a survey on money management competence, in which 51 questions were answered by 60 high school and 50 college juniors and seniors; and (4) a survey on money management in the home, in which 24 questions were sent to five periodicals.
Duration: September 1969-September 1972.
Publications: *Changing Times*, February 1972, 38-41.

30-MB-2 CURRENT PATTERNS OF PARENTAL AUTHORITY AND THEIR EFFECTS ON YOUNG CHILDREN

Investigator(s): Diana Baumrind, Ph.D., Associate Research Psychologist, Department of Psychology, University of California at Berkeley, 3210 Tolman Hall, Berkeley, California 94720.
Purpose: To study patterns of parental authority and their effects on the behavior of young children.
Subjects: 150 families: 65 girls and 85 boys, ages 8 and 9. Approximately 15 percent of the subjects are nonwhite and from middle class backgrounds. The children were originally selected from nursery schools in the Berkeley area.
Methods: Data were collected through observations of the child in school and in structured situations (taking tests), observation of the family in the home, interviews with parents, and parent self-report attitude tests. Child behavior and parent behavior were Q-sorted and cluster analyzed.
Duration: 1967-1974.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Current patterns of parental authority. *Developmental Psychology Monographs*, 1971, 4(1), Part 2; Harmonious parents and their preschool children. *Developmental Psychology*, 1971, 4(1), 99-102; Socialization and instrumental competence. *Young Children*, 1970, 26(2), 104-119.

30-MB-3 THE COMPARABILITY OF BEHAVIORAL DATA IN LABORATORY AND NATURAL SETTINGS

Investigator(s): Sander Martin, Ph.D., Assistant Professor, Department of Psychology, University of Houston, Houston, Texas 77004; and Stephen M. Johnson, Ph.D., Assistant Professor, Department of Psychology, University of Oregon, Eugene, Oregon 97401.
Purpose: To investigate the quality of parent-child interaction under two stimulus situations: clinic and home settings.
Subjects: 40 average families of four children or less, with both parents living at home. No family member is currently under psychiatric care; the target child, between ages 4 and 6, has no history of psychiatric treatment.
Methods: A multimethod correlation study of convergence was conducted. Parent-child interaction data were obtained by a behavioral coding system through trained observers.
Findings: No correlations were found between parent-child interaction in the clinic setting and the parent-child interaction of the same family in the home setting.
Duration: Fall 1970-August 1971.

30-MB-4 FAMILY VIOLENCE

Investigator(s): Murray A. Straus, Ph.D., Professor, Department of Sociology, University of New Hampshire, Durham, New Hampshire 03824.
Purpose: To explore the frequency, types, and circumstances producing violence between family members and the consequences of violence for the child.
Subjects: Subjects for the first study will consist of 1,176 people in an area probability sample of the adult population of the U. S. The second study subjects will be 322 members of families of students in introductory sociology courses at the University of New Hampshire.
Methods: The project will be divided into two studies: the first study will reanalyze data collected by the National Commission on the Causes and Prevention of Violence; the second study will be a preliminary study of violence in the families of university students. In Study 1, personal interviews that cover four aspects of violence will be conducted: (1) approval-disapproval of the use of violence as a political technique, (2) approval-disapproval of the use of violence in interpersonal relations, (3) respondent's actual use of violence, and (4) respondent's observations of violence. This study will focus on the intrafamily aspects of the last three areas. For Study 2, questionnaire data will be collected on the student respondent's report of the frequency of violence during the last year of his enrollment in high school among siblings, between parent and child, and between father and mother. Data will also be gathered on the types of conflicts that provoke violence.
Duration: September 1971-continuing.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare.

SOCIOECONOMIC AND CULTURAL FACTORS

30-NA-1 PERCEPTION OF SELF AND OTHERS AS A FUNCTION OF ETHNIC GROUP MEMBERSHIP

Investigator(s): James G. Cooper, Ed.D., Professor of Research, College of Education, University of New Mexico, Albuquerque, New Mexico 87106.
Purpose: To determine the validity of claims that ethnic minorities possess diminished self-concepts compared to the white majority.
Subjects: 407 Anglo-American, 300 Spanish-American, 157 American Indian, and 52 Afro-American high school students, grade 12, who attend rural schools in New Mexico and Texas.
Methods: All subjects were given a semantic differential test which measured perception of school, self, and social relations. The stem items included "Me as a student," "me"; teachers, the grading system; opportunities for making friends, social activities, community acceptance of "me"; and one item relating to each ethnic group. The bipolar adjective included good-bad, sharp-dull, strong-weak, slow-fast, shallow-deep, unfair-fair, and intelligent-stupid.
Findings: Each group perceived itself more favorably than it perceived any other group. No group monopolized unfavorable ratings, and all four groups possessed favorable perceptions of self and of others.
Duration: January 1971-January 1972.
Cooperating group(s): University of New Mexico Faculty Research Committee.

30-NB-1 VARIATIONS IN PEDIATRIC, NEUROLOGICAL, AND PSYCHOLOGICAL FACTORS IN PRIMARY SCHOOL CHILDREN IN THREE SOCIOECONOMIC AREAS

Investigator(s): A. Evelyn Loadman, M.D., Pediatrician; W. Wallace Grant, M.D., Director; and Anne E. Bell, M.A., Psychologist, Child Development Clinic, Children's Hospital of Winnipeg, 685 Bannatyne Avenue, Winnipeg, Manitoba R3E OW1, Canada.
Purpose: To investigate the relative developmental status of children who enter school in different socioeconomic areas, by means of pediatric, neurological, and psychological examinations; and to assess the possible relationship of the various factors to subsequent school achievement.
Subjects: 20 children in grade 1 in a school in a low socioeconomic area, matched by sex and age with 20 children from a school in a middle socioeconomic area and 20 children from a school in a high socioeconomic area. Children are 6 to 7 years old.
Methods: A pediatric evaluation was supplemented by a modification of Ozer's Extended Neurological Examination to examine the relative developmental status of the children. Developmental data were secured through an interview with the children's mothers. A comprehensive psychological test battery had been administered to all children prior to their entry into the three schools. The achievement measures were obtained from the children at the end of the first year. Data were treated by analysis of variance and chi-square techniques.

Findings: While the psychological battery revealed statistically significant differences among the children, the Extended Neurological Examination showed none. The parents' educational level varied with the socioeconomic area. More low birthweight babies and more difficulties at the time of birth were found among the low socioeconomic group. Academic achievement improved directly and significantly with socioeconomic level.
Duration: November 1969-completed.
Cooperating group(s): Winnipeg School Board; St. Boniface School Board.

30-NB-2 A STUDY OF ACADEMIC PERFORMANCE OF EOP CHICANOS, NON-EOP CHICANOS, AND ANGLOS, AND THE RELATIONSHIP OF ATTITUDES TO ACADEMIC PERFORMANCE

Investigator(s): David Lopez Lee, Ph.D., Associate Professor; Raul Rodriguez; Joel Nossoff; Consuelo Moore; Michael Miranda; and Manuel Ruiz, Mexican-American Studies Department, California State College, South Tower F616, 5151 State College Drive, Los Angeles, California 90032.
Purpose: To assess and improve the academic performance of Chicano students in the Educational Opportunities Program (EOP).
Subjects: Three groups of undergraduate students at California State College, Los Angeles: (1) regularly admitted Chicano students, (2) regularly admitted Anglo students, and (3) Chicano students admitted to the Educational Opportunities Program (EOP).
Methods: Phase I of the program statistically contrasted the academic performance and associated variables of the three groups. Phase II assessed the relationship between academic performance and attitudes for these groups.
Findings: The EOP Chicano students performed at least as well as the other two groups, and they carried more difficult and heavier course loads than students from the other two groups. The students' course loading was more highly related to satisfactory academic standing for the EOP Chicanos than for the regularly admitted Chicanos. Phase II results indicated three areas of attitude that might improve the selection procedure of the Educational Opportunities Program: (1) the need for positive self-images for Mexican-Americans, (2) their attitudes towards school, and (3) their behavioral assimilation to the Anglo.
Duration: August 1970-completed.
Cooperating group(s): Educational Opportunity Program.
Publications: A copy of the report may be obtained by sending 45¢ in U. S. postage stamps to Chicano Student Research Project, EOP Office, CSLA, 5151 State College Drive, Los Angeles, California 90032.

30-NB-3 CAREER ORIENTATIONS OF HIGH SCHOOL AGE YOUTHS IN HAWAII

Investigator(s): Robert N. Anderson, Ph.D., Assistant Professor, Department of Agricultural and Resource Economics, University of Hawaii, Honolulu, Hawaii 96822.
Purpose: To determine the variables associated with career expectations and aspirations among high school students throughout the state of Hawaii, and to determine the absolute magnitudes of such orientations.
Subjects: 10,500 high school seniors in all schools in Hawaii, with the exception of one private school.
Methods: A survey instrument will be administered to all subjects to gather information

on parental occupational status (prestige level and industry), school location and class, occupational aspirations and expectations expressed by the student, and the sex of the student. Secondary data will be obtained concerning scholastic achievement levels by school. Standard nonparametric statistical techniques and factor analyses will be used to analyze the data.
Duration: Summer 1970-summer 1972.

30-NC-1 A COMPARATIVE STUDY OF THE POLITICAL ORIENTATIONS OF CHILDREN FROM MEXICAN-AMERICAN AND ANGLO-AMERICAN SUBCULTURES

Investigator(s): Morris G. Sica, Ed.D., Professor, Department of Education, California State College, 800 North State College Boulevard, Fullerton, California 92631.
Purpose: To compare the political orientations of children from Mexican-American and Anglo-American subcultures.
Subjects: 2,584 Mexican-American and Anglo-American children in grades 4 through 8, primarily from lower socioeconomic groups.
Methods: Group interviews were conducted in the classroom. The children answered oral questions. The percentage of responses to each item was calculated in groups by grade, subculture, ethnic background, sex, social status, and level of ability.
Findings: In general, Mexican-American children seem to be more alienated from the political system than Anglo-American children.
Duration: November 1970-February 1972.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-NF-1 PRESCHOOL RACIAL ATTITUDE MEASURE—II

Investigator(s): John E. Williams, Ph.D., Professor, Department of Psychology, Wake Forest University, Winston-Salem, North Carolina 27109.
Purpose: To reuse and lengthen a previous procedure for measuring racial attitudes among young children.
Subjects: 128 Caucasian and 104 Negro preschool children, ages 37 to 80 months (mean age: 65 months).
Methods: The project involves a picture-study technique to determine a child's tendency to associate positive and negative adjectives with human figures which differ only in skin color. The procedure provides 24 response opportunities and generates scores ranging from 0 to 24. A comparison (control) measure assesses the child's awareness of traditional masculine and feminine sex roles, on a 0 to 12 scale. The procedure may be subdivided into two alternate forms for pre-post measures; e.g., attitude change studies.
Findings: The reliability of the racial attitude score is estimated at .80. Both Caucasian and Negro preschool children show a tendency towards the positive evaluation of light skinned figures, and a negative evaluation of dark skinned figures. The effect is less pronounced among the Negro children.
Duration: August 1971-August 1973.
Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.
Publications: Copies of the report are available from the investigator.

30-NG-1 WEAVING SKILL, COLOR TERMS, AND PATTERN REPRESENTATION AMONG THE ZINACANTECOS OF SOUTHERN MEXICO: A DEVELOPMENTAL STUDY

Investigator(s): Patricia M. Greenfield, Ph.D., Research Fellow, The Center for Cognitive Studies, William James Hall, Harvard University, 33 Kirkland Street, Cambridge, Massachusetts 02138.

Purpose: To study how specific cultural experiences foster the development of particular cognitive skills through the examination of the relation between weaving and pattern representation.

Subjects: 79 Zinacanteco children (members of a Mayan group in southern Mexico), ages 4 to 18.

Methods: The subjects were divided into four groups according to age, sex, and schooling. In principle, the investigators followed a strategy suggested by Price-Williams (1967) of starting with a familiar task, performed with familiar materials in a familiar context; next varying the context; then, in addition, the materials; and finally, the task itself. This strategy makes it theoretically possible to judge the extent to which a person is capable of generalizing the skills involved in a specific task beyond the context in which they were originally learned.

Findings: It was found that knowing how a pattern is woven influenced the weaver's concept of that pattern, but weaving experience did not promote a generalized facility in representing patterns. School experience alone had an effect similar to weaving on representation of the woven patterns. The use of color in patterns was related to an individual's color lexicon. There was also evidence for universal processes in the development of pattern representation.

Duration: July 1967-November 1971.

Cooperating group(s): Harvard Chiapas Project; National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Putnam Fund, Radcliffe Institute; Milton Fund, Harvard University; National Science Foundation; Abraham Lincoln Fellowship, Mexican Government.

EDUCATIONAL FACTORS AND SERVICES

General Education

30-OA-1 THE PRESCHOOL CHILD'S NEAR ENVIRONMENT: VARIABLE MANIPULATION AND EVALUATION

Investigator(s): Robert Bartholomew, M.F.A., Assistant Professor, Department of Design and Environmental Analysis; Tom Hertz, Ph.D., Assistant Professor; and Marion Potts, Ph.D., Assistant Professor, Department of Human Development and Family Studies, College of Human Ecology, Cornell University, Ithaca, New York 14850.
Purpose: To investigate the effects of space, light, sound, color, and varying furniture arrangements or heights on the social interaction or play activities of preschool children.
Subjects: 3- and 4-year-old children who attend Cornell University Nursery School. Most children are white and from the middle class; many are children of Cornell staff and faculty.
Methods: Data will be collected through time sampling observations of the children's behavior and the existing environmental conditions.
Duration: January 1971-July 1972.

30-OA-2 LITERATURE SEARCH AND DEVELOPMENT OF AN EVALUATION SYSTEM IN EARLY CHILDHOOD EDUCATION

Investigator(s): Annie L. Butler, Ed.D., Associate Professor; Edward E. Gotts, Associate Professor; Nancy Quisenberry, M.A., Research Associate; and Robert Thompson, B.A., Research Assistant, Department of Education, Indiana University, Bloomington, Indiana 47401.
Purpose: To examine recent research to identify behavioral characteristics of advantaged and disadvantaged 3-, 4-, and 5-year-old children; to develop behavioral objectives and examine evaluation instruments; and to propose guides for evaluating programs for the same group.
Methods: A group of 10 reviewers in child development fields (sociology, nursing, educational psychology, early childhood education, special education, and international education) abstracted over 1,300 research studies which were categorized according to the subjects' socioeconomic levels, ages, and ethnic backgrounds. Data were further categorized in the psychomotor, affective, and cognitive domains, and behavioral objectives were developed from this categorization. Tests were abstracted and categorized according to the behaviors measured.
Findings: While there is a great amount of data on advantaged white and disadvantaged black children, there is little or no data on disadvantaged white and advantaged black children. It is not possible to develop a taxonomy of behavioral characteristics. The collected information does not lend itself to the development of behavioral objectives. Many tests have been developed for the measurement of preschool behavior but have not been standardized on different populations represented in the study.
Duration: June 1970-July 1971.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-OA-3 INTENSIVE EVALUATION OF A HEAD START CENTER UTILIZING THE TUCSON EARLY EDUCATION MODEL

Investigator(s): Robert K. Rentfrow, Ph.D., Coordinator of Evaluation, Arizona Center for Early Childhood Education, 1515 East First Street, Tucson, Arizona 85719.
Purpose: To use a criterion-referenced evaluation system to assess the impact of the implementation of the Tucson Early Education Model (TEEM) on the development of preschool children.
Subjects: 180 preschool boys and girls (4-year-olds, 60 percent; 5-year-olds, 40 percent), who participate in local Head Start centers.
Methods: Using a pretest-posttest design, 120 treatment children and 60 control children are being tested. The instrumentation was chosen to reflect the program structure of the TEEM, including an evaluation of a language base, a motivational base, an intellectual base, and societal skills. Data are also being collected on teacher attitudes and parent participation.
Duration: August 1971-August 1972.
Cooperating group(s): Lincoln Public Schools, Nebraska; Stanford Research Institute.

30-OA-4 THE LEARNING BOOTH: PRODUCT EVALUATION REPORT

Investigator(s): Nicholas F. Rayder, Ph.D., Director of Evaluation; and Glen P. Nimnicht, Ph.D., Far West Laboratory for Educational Research and Development, 1 Garden Circle, Hotel Claremont, Berkeley, California 94705.
Purpose: To evaluate the Learning Booth Program in anticipation of its release as a product of the Far West Laboratory.
Subjects: 2,454 children in kindergarten and grade 1 enrolled in the Responsive Follow-Through Program.
Methods: Two main objectives of the program were (1) to offer a child an experience consistent with the Responsive Environment Program, and (2) to provide training for Learning Booth attendants. Objective 1: Daily child Learning Booth performance records were analyzed. Each child's total time in the booth and the final phase he reached were calculated at the end of the year. For the analysis, children were grouped according to the level of implementation of the Learning Booth Program in their districts. Objective 2: Two approaches to training were used. In the first approach, senior booth attendants from each Follow-Through district traveled to the laboratory for training. After 5 days' training, they returned to their districts and set up a booth to train other booth attendants. In the second approach, prospective booth attendants received the maual, *Guide for Learning Booth Attendants,* to see if it provided sufficient information to allow them to set up and operate a Learning Booth. A laboratory observer conducted observations to assess the effectiveness of booth attendants.
Findings: Objective 1: It was anticipated that if the booths operated effectively, some children would complete the booth program (reach Phase V), and that 75 percent of the children would complete Phase III by the end of the year. The data showed that for booths in districts with satisfactorily implemented programs, 91 percent of the children completed the year at or above Phase III, and 55 percent of the children completed Phase V. Objective 2: The criterion for meeting the first approach to training was that 80 percent of the attendants trained by the senior booth attendants would perform at acceptable levels. Observation data showed that 82 percent of 60 booths judged were operating at a good to excellent level, 18 percent were judged not satisfactory, and only three booths were judged as poor. Of the four attendants trained only by using the manual, two were operating excellent booths after 5 months.

Duration: September 1970-January 1972.
Publications: A copy of the report is available from the investigator.

30-OA-5 SOUTHWEST REGIONAL LABORATORY FOR EDUCATIONAL RESEARCH AND DEVELOPMENT (SWRL)

Investigator(s): Robert W. O'Hare, Associate Director, Southwest Regional Laboratory for Educational Research and Development, 11300 La Cienega Boulevard, Inglewood, California 90304.
Purpose: To produce improved instructional outcomes through the development of research-based, performance-verified instructional systems and the support systems for their effective use; and to produce a technology that provides replicable systematic procedures to effect improvement in education.
Subjects: Subjects range from preschool and primary grade pupils to school teachers and university professors.
Methods: The project activities are essentially a sequence of trial-revision interactions, with modification after each test to successively approximate the consequences being sought. Each activity contributes to the preparation of organized methods and materials that accomplish specified program outcomes. The development process includes (1) Formulation: specifying the desired system outcomes and the elements and methods required to achieve them; (2) Prototype: testing potential strategies by empirically investigating variations of materials and methods; (3) Component: producing a segment of the system and trying it out in a natural setting; (4) Product: successively trying out and revising a combination of components in a natural setting; (5) Installation: integrating the products into programs which are combined with existing school operations; and (6) Program: involving the agencies which will be responsible to maintain operational use of the programs. Studies and tryouts, ranging in duration from 1 day to the entire school year, are conducted during various stages of product development. The primary tryout emphasis to date has been in the area of preschool and primary education. The Southwest Regional Laboratory (SWRL) presently has a staff of approximately 185 full-time professional personnel, who perform distinct but interrelated functions. The work program is planned, conducted, and reviewed within the framework of the four SWRL divisions: (1) Product Design: conducts directed research activities to generate specific information related to the nature of developed products; (2) Product Development: conducts activities to generate instructional systems, instructional support systems, and curriculum programs; (3) Resource Services: provides shared functions of a liaison, logistic, and technical nature; and (4) Product Integration: conducts activities to generate training systems, installation systems, accountability systems, and modification systems.
Findings: During the 1971-72 school year, approximately 150,000 elementary school pupils in over 100 school districts in 15 states used one or more of the 10 SWRL-developed instructional and/or support systems. Several SWRL-developed instructional and support systems are ready for large scale distribution to the nation's schools, and are being commercially published and marketed.
Duration: 1966-continuing.
Cooperating group(s): More than 150 school districts in 15 states.

30-OE-1 CREATIVITY

Investigator(s): Ake Bjerstedt, Professor; Goran Hansson, Assistant; and Anneli Eriksson, Assistant, Department of Educational and Psychological Research, Malmo School of Education, Fack, S-200 45 Malmo 23, Sweden.
Purpose: To construct, adapt, and try out tests for the identification and measurement of children's creativity; to recommend the types of instruction that promote creativity.
Subjects: Approximately 450 pupils in grades 4, 6, and 8; and approximately 300 experts in the field of education.
Methods: A survey of recent literature on creativity was constructed. Several creativity, personality, and intelligence tests were administered to each of the pupils to establish relationships that might exist between creativity and the other variables. A questionnaire was administered to the educational experts to determine their opinions on creativity and how it should be encouraged in the schools. The investigation will also include classroom observations to examine creative instruction.
Duration: 1970-1971.

30-OF-1 BIRTHWEIGHT AND SCHOOL ACHIEVEMENT

Investigator(s): Marguerite L. Bittner, M.A., Researcher; and Jane Altes, M.A., Lecturer, Regional and Urban Development Studies and Services, Southern Illinois University, Edwardsville, Illinois 62025.
Purpose: To study the relationship between birthweight and later school achievement of urban black children.
Subjects: 1,215 black third and sixth grade boys and girls who attend inner city schools in East St. Louis, Illinois.
Methods: School records of all third and sixth grade classes in selected schools were checked, and only children who were born in the immediate Illinois and Missouri areas were selected. Socioeconomic data, test scores, and grade retentions were recorded. Birth record information was obtained on all children in the sample; and data on weight, birth complications, mother's age, previous deliveries, and prenatal care were recorded.
Duration: October 1970-June 1972.
Cooperating group(s): East St. Louis School District.

30-OF-2 EFFECTIVE REINFORCEMENT IN ELEMENTARY SCHOOL CLASSROOMS

Investigator(s): Pauline S. Sears, Ph.D., Professor, Department of Education, Center for Research and Development in Teaching, Stanford University, Stanford, California 94035.
Purpose: To investigate the effectiveness of teaching strategies to develop children's self-concept, internal locus of control, and school achievement.
Subjects: Subjects used in the first year of the study: six children in grade 3 and their teachers; second year: 19 children in grade 4 and their teachers. The subjects were divided into control and intervention groups. Present subjects include all children and teachers in one elementary school; most children are black, from low income families.
Methods: Classroom observations of both teaching styles and child behavior are made, and the teachers are rated on attitude scales. The Sears Self-Concept Inventory, the Hess-Shipman Locus of Control Inventory, achievement tests, social distance scales, and attitude scales were administered to the children. All measures were taken in the

fall and spring; some were administered more frequently. The data are analyzed by regression analysis and aptitude-treatment interaction.

Findings: The data from the first year have been analyzed. Verbal achievement was found to be best predicted by teacher ratings of intellectual promise and teacher behavior of giving information publicly. Achievement is higher in classrooms in which more individualized instruction is used, especially for children with higher self-concepts. Height of self-concept is best predicted by teacher behavior of giving private approval to individuals, and by the child's feeling of peer acceptance in the classroom. Internal locus of control is predicted by the child's actual acceptance by his classmates. Teacher's criticism with explanation carries negative weight in prediction of internal control in children.

Duration: Fall 1969-fall 1973.

Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

Publications: A technical report is available from the investigator.

30-OF-3 SCHOOL SOCIAL ENVIRONMENT STUDY

Investigator(s): Wilbur B. Brookover, Ph.D., Professor; and Richard J. Gigliotti, M.A., Instructor, Department of Sociology, Michigan State University, East Lansing, Michigan 48823.

Purpose: To assess the impact of certain environmental factors on the academic achievement of students in elementary schools.

Subjects: Approximately 1,300 white and 1,300 black elementary school children in grades 4, 5, and 6, from selected urban, suburban, and rural elementary schools.

Methods: Schools were matched in pairs controlling for race, socioeconomic status, and geographic location (urban, suburban, and rural) while varying the school achievement level. Data were collected from students and teachers by questionnaires and by interviews with the school principals. An attempt was made to isolate structural effects by controlling individual background factors. Correlation coefficients, t-tests, chi-squares, and multiple discriminant analyses are the primary methods of analysis.

Findings: Expectational climate, competition press, and community stability seem to have important influences on the dependent variables of achievement, sense of control, and aspirations.

Duration: September 1970-September 1972.

Cooperating group(s): Human Learning Research Institute, Michigan State University; Office of Education, U. S. Department of Health, Education, and Welfare; Michigan State Department of Education.

Publications: The results will be published as a U. S. Office of Education Research Report.

30-OF-4 INSTRUCTIONAL RESEARCH WITHIN DISTAR PROGRAM

Investigator(s): Martin Siegel, M.A., Research Associate, Department of Educational Psychology; Barak Rosenshine, Ph.D., Associate Professor, Bureau of Educational Research, College of Education, University of Illinois, Urbana, Illinois 61801.

Purpose: To determine whether teacher implementation of objectives stressed in training were related to measures of residual class mean gain.

Subjects: 12 to 24 groups of kindergarten and grade 1 students.
Methods: Data were collected on ratings of classroom events, pretest and posttest scores on the same measures, and correlations of ratings in instructional behaviors with class mean residual gain scores.
Findings: Teacher ratings on correction procedures, signals, and following lesson format for individual groups are most consistently related to student achievement.
Duration: September 1970-September 1971.
Cooperating group(s): Decatur Public Schools.

30-OG-1 MANAGING PROBLEM BEHAVIOR IN THE CLASSROOM

Investigator(s): George L. Gropper, Ph.D., Director, Instructional Media Studies, American Institutes for Research, 710 Chatham Center Office Building, Pittsburgh, Pennsylvania 15219.
Purpose: To develop and evaluate a program designed to train teachers at the elementary and secondary levels to use reinforcement principles in order to strengthen adaptive classroom behaviors and to extinguish nonadaptive classroom behaviors.
Subjects: Six teachers of grades 3 to 8 and approximately 150 male and female students.
Methods: Program effectiveness was assessed. Both teachers' responses on program exercises and students' changes in behavior were assessed. The frequency of problem behaviors was estimated by the teachers.
Findings: Significant reductions in problem behaviors including inattention, hyperactivity, noisemaking, and antisocial behavior were reported.
Duration: June 1969-completed.
Cooperating group(s): Pittsburgh Public Schools.
Publications: Gropper, G. L. and Kress, Jr., G. C. *Managing problem behavior in the classroom. A handbook.* New York: New Century, 1970; Gropper, G. L. *Evaluation of a program to train teachers to manage social and emotional problems in the classroom. Final Report.* Pittsburgh: American Institutes for Research, 1971.

30-OG-2 ACHIEVEMENT MOTIVATION AND THE CHILD'S ENVIRONMENT

Investigator(s): Martin Gold, Ph.D., Program Director; Sheila Feld, Ph.D., Research Associate; Grace Mack, M.A., Research Assistant; David Ruhland, M.A., Research Assistant, Institute for Social Research, University of Michigan, Box 1248, Ann Arbor, Michigan 48130.
Purpose: To examine the factors in the contemporaneous school situation that encourage or discourage elementary school children from investing their motivation to achieve into their school work.
Subjects: The first phase of the study included 197 children in eight classrooms, grades 1 and 4, in a predominantly black school and a predominantly white school. The second phase of the project included 159 of the same children in grades 2 and 5, plus 40 additional children in their classes.
Methods: In both phases of the project, each child participated in three group testing situations in their own classrooms and in one individual session. Data were collected during the first phase on achievement anxiety (Test Anxiety Scale for Children), different measures of achievement motivation, defensiveness (Crandall Social Desirability Scale for Children), self-esteem, reading and arithmetic achievement, and report card grades. Similar data were collected during the second phase with additional measures on student

role perceptions, race and sex preferences, race and sex role perceptions, and sociometric status.
Findings: Self-esteem was found to be significantly negatively associated with vocabulary and arithmetic performance, but not significantly related to scholastic achievement. First graders with high self-esteem were found to take longer to complete a numbers task than those with low self-esteem. Self-esteem for the fourth graders was found to be positively associated with vocabulary and arithmetic test performance and negatively associated with errors on a numbers task. It was found that older children have higher levels of social comparison achievement orientations. It was found that social comparison achievement motivation was greater among grade 4 than grade 1 students.
Duration: June 1969-continuing.

30-OG-3 ADAPTIVE BEHAVIOR IN VARIED HIGH SCHOOL ENVIRONMENTS

Investigator(s): James G. Kelly, Ph.D., Professor; Elizabeth Douvan, Ph.D., Professor; John Hagen, Ph.D., Associate Professor; and James Jackson, Ph.D., Assistant Professor, Department of Psychology, University of Michigan, Ann Arbor, Michigan 48104.
Purpose: To conduct a longitudinal study of coping preferences of high school students.
Subjects: 150 boys who attend three different high schools in the Detroit area.
Methods: Data will be collected through questionnaires, sample surveys, interviews, and naturalistic observations.
Findings: Boys with high preferences for exploration were found to express more satisfaction with school, show more initiative, and have higher self-esteem. A differential adaptation was found at the different schools.
Duration: May 1968-August 1974.
Publications: Kelly, J. G. Antidotes for arrogance: Training for community psychology. *American Psychologist*, 1970, 25, 524-531; Trickett, E. J.; Kelly, J. G.; and Todd, D. M. The social environment of the high school: Guidelines for individual change and organizational redevelopment. In S. Golann and C. Eisdorfer (Eds.), *Handbook of community psychology*. New York: Appleton-Century-Crafts, 1972.

30-OG-4 EPIDEMIOLOGY OF EXCEPTIONALITY: ADAPTIVE BEHAVIOR PROJECT

Investigator(s): Jane R. Mercer, Ph.D., Associate Professor, Department of Sociology, University of California at Riverside, Riverside, California 92502.
Purpose: To develop, pretest, and standardize an adaptive behavior inventory for a representative sample of children who attend school in California.
Subjects: 700 Mexican-American children, 700 Afro-American children, and 700 Anglo-American children, ages 5 to 11. Children, ages 3 to 15, will be given the pretest.
Methods: Pretest data will be gathered through a questionnaire administered to parents which is designed to tap the adaptive behavior of their child. Data will include sex, age, ethnic group, occupation of head of household, and the school program in which the child participates. The pretest instrument will be refined using item, factor, and regression analyses. The adaptive behavior inventory will be administered to parents of the children in the representative sample.

Duration: June 1971-August 1974.
Cooperating group(s): National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Department of Mental Hygiene, State of California; Pacific State Hospital.

30-OH-1 DEVELOPMENT OF EXPECTATIONS IN CHILDREN

Investigator(s): Doris R. Entwisle, Ph.D., Professor; and Murray Webster, Ph.D., Assistant Professor, Department of Social Relations and Engineering Science, Johns Hopkins University, Baltimore, Maryland 21218.
Purpose: To study how children develop expectations for their performance and how this influences their performance.
Subjects: 100 white middle class children in grade 1; and other children of elementary school age.
Methods: Data will be collected by questionnaires to parents, teachers, and children; experiments with children; school records; and observations of children and teachers in the classroom.
Duration: July 1971-July 1973.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-OH-2 CHILDREN'S EXPECTATIONS IN THE CLASSROOM

Investigator(s): Doris Entwisle, Ph.D., Professor; and Murray Webster, Ph.D., Assistant Professor, Department of Social Relations, Johns Hopkins University, Baltimore, Maryland 21218.
Purpose: To study children's expectations of their performance in the classroom.
Subjects: About 400 elementary school children, including rural children, innercity black children, and middle class white children.
Methods: Data were gathered through experiments and questionnaires and other less direct questioning techniques.
Findings: Children's expectations for their own performance can be raised experimentally, and this will induce the child to volunteer (raise his hand) more often.
Duration: 1971-1974.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

30-OJ-1 THE PARENT INVOLVEMENT PROGRAM

Investigator(s): Russell A. Dusewicz, Ph.D., Director, Project for Research in Infant Development and Education, Bureau of Research, Pennsylvania State Department of Education, Box 911, Harrisburg, Pennsylvania 17126.
Purpose: To evaluate the effects of a program designed to help disadvantaged parents understand and use opportunities in the home for educating their children.
Subjects: 30 disadvantaged mothers of children, ages 15 to 28 months, divided equally into an experimental parent evaluation group and a control group.

Methods: All mothers are pre- and posttested on a specially constructed Knowledge and Attitude in Child Development Scale. All children are pre- and posttested on the Slosson Intelligence Test, the Peabody Picture Vocabulary Test, and the Vineland Social Maturity Scale. Evaluation of the program is based on the parent and child gain scores.
Duration: September 1971-June 1972.
Cooperating group(s): West Chester State College.
Publications: Copies of the report are available from the investigator.

Specific Skills

30-PA-1 THE PRESCHOOL MATH PROGRAM

Investigator(s): Russell A. Dusewicz, Ph.D., Director; and Ruth M. McClure, M.S., Staff Member, Project for Research in Infant Development and Education, Bureau of Research, Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.
Purpose: To determine the feasibility and practicality of teaching math to children, ages 2 and 3, and to compare the effectiveness of group and individual instruction at these ages.
Subjects: 13 disadvantaged children, ages 28 to 40 months.
Methods: Eight of the subjects were randomly assigned to two classes receiving group instruction; five subjects were assigned to individual instruction. Three teachers and lesson times were rotated on a daily basis. Thirty-three lessons were given over a 9-week period. A correlated t-test on pre- and posttest data from a constructed achievement test provided the means for analysis of gain scores for each group. An analysis of covariance on the posttests, using pretest scores as the covariate, was performed to assess individualized versus group teaching.
Findings: Both individual and group modes made significant improvement in their understanding of math concepts as measured by the achievement test. The individual mode scores were significantly higher than the group mode scores.
Duration: February 1971-completed.
Cooperating group(s): West Chester State College.
Publications: Copies of the report are available from the investigator.

30-PB-1 THE INFANT READING PROGRAM

Investigator(s): Russell A. Dusewicz, Ph.D., Learning Research Center, West Chester State College, West Chester, Pennsylvania 19380. Address correspondence to: Bureau of Research, Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.
Purpose: To evaluate a program that is designed to develop, implement, and evaluate a reading program for 2- and 3-year-old children.
Subjects: 36 disadvantaged children, ages 2 and 3.
Methods: The children were randomly assigned, equally by sex, to either an experimental reading group or a control group. The experimental group was divided into subgroups of two and four children, and each subgroup received one 10-minute reading lesson per day

for a period of 8 weeks. The lessons were based upon word-picture associations and the use of meaningful sentences. A pre- and posttest were administered using a specially constructed word recognition and sentence comprehension measure.
Findings: Both analysis of covariance of pre- and posttest scores and a Mann-Whitney U Test on gain scores indicated significant superiority of the experimental reading group over the control group.
Duration: September 1971-November 1971.
Cooperating group(s): Pennsylvania Department of Education.
Publications: Copies of the report are available from the investigator.

30-PB-2 A COMPARISON OF DIRECTIVE AND NONDIRECTIVE TEACHING OF READING AND SPELLING WITH THE AID OF AN ELECTRIC TYPEWRITER

Investigator(s): Donald Stewart Baer, M.A., Research Director, Creative Learning Center, 1616 East Illinois, Dallas, Texas 75216.
Purpose: To evaluate the relative effectiveness of two methods of teaching reading and spelling to preschool and early school children.
Subjects: 52 boys and girls, ages 1 to 7, who are bright children, mostly from poverty areas of Dallas. All students attend a private, year-round, Montessori school.
Methods: A pre- posttest analysis of covariance will be made on the variables: sex, age, race, and socioeconomic status. An evaluation will be made of the children's preference of teaching methods (directive or nondirective), based on questionnaire answers and behavioral measures. Semantic differential will be used to evaluate parameters of the two different teaching styles.
Findings: Results indicate that a single teacher can validly teach children using two different teaching methods: i.e., at a level sufficiently different to be reliably rated differently by raters viewing videotapes of teaching sessions.
Duration: March 1971-February 1972.
Cooperating group(s): Office of Education, U.S. Department of Health, Education, and Welfare.

30-PB-3 SANTA MONICA BALANCED READING INSTRUCTION: PILOT STUDY

Investigator(s): Constance E. Amsden, Ph.D., Associate Professor, Department of Education, California State College at Los Angeles, Los Angeles, California 90032; Lois Braun, M.A., Curriculum Director; Tony Baratta, M.A., Director of Education; and Alfred Artuso, Ed.D., Superintendent, Santa Monica Unified School District, 1723 Fourth Street, Santa Monica, California 90401.
Purpose: To determine whether instructional balance across five reading skills is a more effective method to teach a child to read than is emphasis on any skill or combination of skills.
Subjects: 2,500 elementary school children, kindergarten through grade 6, in five selected schools in Santa Monica, California.
Methods: An objective testing schedule will be used to compare reading progress from the beginning to the end of the school year.
Duration: October 1971-September 1972.

30-PB-4 DEVELOPMENTAL DYSLEXIA: A LONGITUDINAL STUDY

Investigator(s): Paul Satz, Ph.D., Professor, Department of Clinical Psychology, Shands Teaching Hospital, University of Florida, Box 765, Gainesville, Florida 32601.
Purpose: To test a theory of specific developmental dyslexia in children, which formulates the disorder as a delay in the maturation of the central nervous system; which, in turn, retards the acquisition of developmental-behavioral skills.
Subjects: 678 white kindergarten boys in the Alachua County School System, Florida.
Methods: A battery of 15 neuropsychological and developmental measures was given to each child during the fall of 1970 or the fall of 1971. After 2 1/2 years from the date of original testing, reading achievement tests will be administered to identify disabled and normal reading children. Factor analyses and multivariate analyses will be used to statistically evaluate the findings.
Duration: June 1970-May 1973.
Cooperating group(s): Public Health Service, U. S. Department of Health, Education, and Welfare; Alachua County School Board, Alachua County, Florida.
Publications: Satz, P. and Sparrow, S. Specific developmental dyslexia: A theoretical reformulation. In D. J. Bakker and P. Satz (Eds.), *Specific reading disabilities: Advances in theory and method.* Rotterdam: University of Rotterdam Press, 1970.

30-PB-5 A LONGITUDINAL STUDY OF CONSTANCY OF READING PERFORMANCE

Investigator(s): Kenneth D. Hopkins, Ph.D., Professor and Director, Laboratory of Educational Research, University of Colorado, Education Annex #102, Boulder, Colorado 80302; and Glenn H. Bracht, Ph.D., Assistant Professor, Department of Educational Psychology, University of Minnesota, Minneapolis, Minnesota 55455.
Purpose: To determine if children's early success in reading relates to long-term reading competency.
Subjects: Approximately 6,000 students followed from grade 1 to grade 9.
Methods: The students were tested each year with standardized reading tests in grades 1 through 9. Means, standard deviations, and correlations for all grade levels will be calculated.
Findings: Substantial stability has been found in relative performances of the students.
Duration: 1968-1973.
Cooperating group(s): Boulder Valley School District.

30-PB-6 THE TASK IS READING: THE APPROACH IS PERSONALITY DEVELOPMENT

Investigator(s): Janet J. Larsen, Ed.D., Assistant Professor, Department of Comprehensive English; and Counselor, Reading and Study Skills Center, University of Florida, S. W. Broward Hall, Gainesville, Florida 32601; and Hellen I. Guttinger, M.Ed., Counselor and Director, Reading Laboratory, P. K. Yonge Laboratory School, University of Florida, Gainesville, Florida 32603.
Purpose: To evaluate the effectiveness of a developmental individualized reading program within a reading laboratory setting when the responsibility for improvement is given to the student.
Subjects: 296 students, grades 6, 8, 9, and 11, equally divided by sex.
Methods: The children were randomly assigned to experimental and control groups. A 9-week program was conducted which included pre- and posttesting, planning con-

ferences, laboratory experiences, counseling, and evaluative conferences. Counselors emphasized development of internal motivation and self-evaluation.

Findings: An experimental group of students in grade 6 were found to be superior to a similar control group in reading rate and comprehension. A group of students in grade 8 who voluntarily enrolled in the program were superior to students assigned to the program in reading rate and comprehension. Experimental groups in all grades improved significantly in their reading rate. A counseling orientation to reading was found to be an effective way to develop skills in all grades. Voluntary enrollment had a positive effect on vocabulary growth in grade 8.

Duration: September 1970-June 1971.

Cooperating group(s): College of Education, University of Florida.

30-PB-7 CHARACTERISTICS OF BEGINNING READERS

Investigator(s): Coleman Morrison, Ph.D., Professor; and Marciene Mattleman, Ed.D., Associate Professor, English Education, Department of Curriculum and Instruction, Temple University, 278 Ritter Hall, Philadelphia, Pennsylvania 19122.

Purpose: To attempt to determine relationships between learning style (propensity toward modality) and early reading performance.

Subjects: 120 grade 1 children, half of whom reside in the inner city and half of whom are suburban residents.

Methods: Pretests were administered for IQ, personality, and learning characteristics prior to any formal instruction in grade 1. Four groups received different methods of teaching, and each will be compared with control groups. Posttests will attempt to correlate achievement with personal traits.

Duration: September 1971-June 1972.

30-PB-8 CERTAIN HOME ENVIRONMENTAL FACTORS AND CHILDREN'S PRIMARY GRADE READING ACHIEVEMENT

Investigator(s): Wilma H. Miller, Ed.D., Associate Professor, Department of Education, Illinois State University, Normal, Illinois 61761.

Purpose: To ascertain the relationships between the home environmental factors of maternal teaching style, maternal language style, children's daily schedules, and home prereading activities and children's primary grade reading achievement.

Subjects: In 1969, 75 upper-middle class, upper-lower class, and lower-lower class mothers of kindergartners were interviewed. In 1971, only 48 children of the sample remained and were in grade 2 and received reading tests.

Methods: During home interviews, the following independent variables were obtained: maternal teaching style; maternal language style as measured by six language scales of mean sentence length, adjective range, adverb range, verb elaboration, complex verb preference, and syntactic structure elaboration; children's daily schedules; and home prereading experiences. The dependent variables were the four subtests of the Stanford Achievement Test which relate to reading. Relationships existing between the independent and dependent variables were studied by correlation procedures.

Findings: There were no significant correlations between maternal teaching style and reading achievement. Some significant correlations were found between maternal language and reading achievement especially when the total group was considered. There were no significant correlations between children's daily schedules and reading achieve-

ment. There were significant relationships between home prereading activities and reading achievement when the total group was considered.
Duration: Winter 1969-spring 1972.
Publications: Copies of the report are available from the investigator.

30-PC-1 THE SINGING ABILITY OF KINDERGARTEN AND FIRST GRADE CHILDREN IN EAST TEXAS

Investigator(s): William T. Young, Ph.D., Associate Professor, Stephen F. Austin State University, Nacogdoches, Texas 75961.
Purpose: To investigate the vocal singing range of children, their comparative ability to sing major and minor melodies, and the development of their voices.
Subjects: 106 kindergarten and 106 grade 1 children, 40 percent Negro, 60 percent Caucasian.
Methods: A specially designed oral, individual singing test was given to each subject. His responses were tape recorded and evaluated at a later time.
Findings: Results indicate that Negroes have lower singing voices than Caucasians. All girls were found to have lower voices than boys; major and minor melodies were sung with equal facility by all children. The singing quality for the best singers stops at 4th D, and a typical range is from A below to first line G.
Duration: May 1971-August 1971.
Cooperating group(s): Stephen F. Austin Faculty Research Fund.

30-PC-2 THE EFFECT OF VARIOUS INSTRUCTIONAL MODES ON CHILDREN'S PERFORMANCE ON MUSIC CONCEPT TASKS

Investigator(s): Donald K. Taebel, D.M.A., Assistant Professor, Department of Music, Concordia Teachers College, Seward, Nebraska 68434.
Purpose: To study the development of musical concepts among children in kindergarten and grades 1 and 2, and to measure the effect of four instructional modes on the performance of music concept tasks.
Subjects: 386 children, ages 5 to 7, from public and parochial elementary schools in Lincoln and Seward, Nebraska.
Methods: The children were randomly selected from their grade levels and placed into four treatment groups. All groups received the same orientation instructions; however, later instructions varied according to the treatment group. The instructional modes used with the four treatment groups were designated discovery, verbal cue, verbal response, and motor response. A special instrument was designed for the study. An analysis of variance was performed on the data.
Findings: Significant differences were found in performance on tests which embodied different concepts. Concepts of volume and tempo are generally available; whereas, concepts of duration and pitch are less developed. The greatest age differences exist between the kindergarten and grade 1 groups. Instructional modes affect the performance but are related to age and type of conceptual problem.
Duration: July 1970-January 1972.
Cooperating group(s): Office of Education, U. S. Department of Health, Education, and Welfare.

Special Education

30-QD-1 THE IMPACT OF PSYCHIATRIC CONSULTATION ON THE PROGRESS OF ELEMENTARY SCHOOL AGE EMOTIONALLY DISTURBED CHILDREN

Investigator(s): Christel A. Woodward, Ph.D., Assistant Professor; Y. Johnson, M.D., Lecturer; R. Roberts, M.A., Lecturer; and Jack Santa-Barbara, Ph.D., Lecturer, Division of Health Sciences, Department of Psychiatry, McMaster University, Hamilton, Ontario, Canada.

Purpose: To evaluate the impact of a psychiatric consultant to the classroom teacher on the behavior, intellectual functioning, and academic progress of emotionally disturbed children in elementary schools.

Subjects: 70 emotionally disturbed and significantly academically retarded children, predominantly boys, ages 7 to 13, who attend special classes in local schools.

Methods: Psychiatric consultation is supplied on a weekly basis to the teacher and principal of half of the participating classes. Demographic data are collected on all children. Data regarding academic level, current intellectual functioning, classroom behavior, and time spent in the regular classroom are gathered near the beginning and end of the school year. The number of children who return to regular class placement, the changes in amount of deviant behavior exhibited in the classroom, and the changes in academic and intellectual functioning are monitored. The children who return to the regular class are followed up on these measures. Statistical treatment of the data includes univariate and multivariate analysis of the postscores; the prescores are a concomitant variable.

Duration: September 1971-June 1973.

Cooperating group(s): Chedoke McMaster Centre; Research and Planning Branch, Ontario Department of Health.

30-QE-1 THE INFANT LEARNING PROGRAM

Investigator(s): Russell A. Dusewicz, Ph.D., Director, Project for Research in Infant Development and Education, Bureau of Research, Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.

Purpose: To evaluate a program designed to develop, implement, evaluate, and improve methods and materials used to teach disadvantaged infants.

Subjects: Subjects for the first year program: 36 disadvantaged infants, ages 19 to 28 months; second year subjects; 44 disadvantaged infants, ages 15 to 28 months.

Methods: For each year of the program, subjects were randomly assigned, proportionately by sex, to either of two groups: (1) a center or experimental group, or (2) a home or comparison group. The center group was exposed to an academically oriented cognitive enrichment program each weekday morning for 4 hours. The infants were tested on the Bayley Scales of Infant Development (BSID), the Peabody Picture Vocabulary Test (PPVT), the Slosson Intelligence Test (SIT), the Stanford-Binet Intelligence Test (SB), the Verbal Language Development Scale (VLDS), and the Vineland Social Maturity Scale (VSMS). All measures were administered on a pre- and posttest basis, with the exception of the BSID and the SB, which were coupled as pre- and posttest respectively. Analyses of covariance were performed across groups on posttest scores, using pretest scores as the respective covariates.

Findings: In the first year program, the PPVT, SIT, and VSMS yielded significant differences favoring the center group over the home group on PPVT raw scores and SIT mental age scores. In the second year program, the BSID and SB, SIT, VLDS, and VSMS showed significant differences favoring the center group on all measures.
Duration: September 1969-continuing.
Cooperating group(s): West Chester State College; Dolfinger-McMahon Foundation; Scott Paper Company.
Publications: Copies of the report are available from the investigator.

30-QE-2 NATIONAL FOUNDATION FOR EDUCATIONAL RESEARCH PRE-SCHOOL PROJECT

Investigator(s): H. L. Williams, B.A., B.Ed., Senior Research Officer, National Foundation for Educational Research in England and Wales, The Mere, Upton Park, Slough, Bucks, SL12DQ, England.
Purpose: To introduce and evaluate a research based program designed to promote success in the primary school among children (particularly disadvantaged) who have attended nursery schools.
Subjects: 300 children, ages 3-6 to 5-2, who were involved in the nursery phase of the study.
Methods: Four state affiliated nursery schools provided the experimental and control groups for the three aspects of the program: (1) language training (based on the Peabody Language Development Kit), (2) perceptual training (a more free and informal classroom oriented program), and (3) parental involvement (including discussion groups, craft and creativity sessions, classroom observation, and use of a special library of children's books). The impact of the program is assessed by pre- and posttesting individuals on linguistic and perceptual abilities in the nursery school and testing the children in groups on attainments in the infant school. Teachers will complete behavior and adjustment schedules in nursery and infant schools. The nursery school battery includes the Illinois Test of Psycholinguistic Abilities, the Frostig Test of Visual Perception, English Picture Vocabulary Test, and Beery's Visual-Motor Integration Test. The nursery teachers will complete the Stott Effectiveness Motivation Scale and the Eisenberg Symptom Checklist. When the child enters the infant school, he will receive the Boehm Concept Inventory, and the teacher will complete an adjustment to school scale. After six terms in the infant school, the children are tested on the Gates-MacGinitie Reading Comprehension Test and a basic mathematics test. Teachers will rate the children on the Project Head Start Classroom Behavior Inventory and Rutter's Scale for detection of maladjustment. Statistical treatment will include analyses of variance and covariance and a closer scrutiny of specific treatment effects.
Duration: April 1968-March 1973.
Cooperating group(s): Slough Education Committee.

30-QH-1 SELF-TEACHING SPECIAL EDUCATION

Investigator(s): Karl-Gustaf Stukat, Professor; and Ulla-Britt Bladini, Self-Teaching Special Education (SISU) Project, Institute of Education, Gothenburg School of Education, Lararhogskolan, Skanegatan 18, S-412 51, Goteborg, Sweden.
Purpose: To analyze the need for self-teaching material in special education (presently in the areas of Swedish and mathematics) and to construct this material to supplement regular classroom teaching.

Subjects: Children with learning disabilities in about 60 clinics and 20 special classes.
Methods: The self-teaching material will be introduced following a general diagnosis of the pupils after the teacher has instructed them. Such variables as the learning effects of the self-teaching material, teacher and pupil attitudes, and the pupils' self-reliance and self-confidence will be investigated.
Duration: 1967-1972.

30-QH-2 EVALUATION OF A COMPUTER-ASSISTED INSTRUCTION COURSE IN THE EARLY IDENTIFICATION OF HANDICAPPED CHILDREN

Investigator(s): G. P. Cartwright, Ph.D., Associate Professor; and Carol A. Cartwright, Ph.D., Assistant Professor, Department of Education, Pennsylvania State University, University Park, Pennsylvania 16802.
Purpose: To determine the efficacy and efficiency of two approaches to teaching a course on the early identification of handicapped children.
Subjects: The CAI group was composed of 23 females and 4 males: 25 undergraduate and 2 graduate students. The CI group was composed of 72 females and 15 males: 80 undergraduate and 7 graduate students.
Methods: Two methods of instruction were employed to teach the course: one method used computer-assisted instruction (CAI); the other method used conventional lecture-discussion techniques (CI). All students enrolled in a special education course were randomly assigned to either the CAI or the CI group. Objectives for both versions of the course were the same. The same criterion test was administered to all subjects at the same time. Criterion test scores and time to complete the course were the dependent variables. Criterion test score differences were analyzed by t-tests.
Findings: CAI students received significantly higher criterion test scores than the CI students. CAI students completed the course in an average of 12 hours less time than the CI students.
Duration: July 1969-June 1971.
Cooperating group(s): Bureau of Education for Handicapped, Office of Education, U. S. Department of Health, Education, and Welfare; Bureau of Education Personnel Development, Office of Education, U.S. Department of Health, Education, and Welfare.
Publications: Cartwright, C. A.; Cartwright, G. P.; and Robine, G. G. CAI course in the early identification of handicapped children. *Exceptional Children,* 1972, 38, 453-459; Cartwright, G. P. and Cartwright, C. A. A computer-assisted instruction course in the early identification of handicapped children. *Journal of Teacher Education*(in press).

30-QH-3 "WIZARD OF OZ" SCREENING FOR LEARNING DISABILITIES PROJECT

Investigator(s): Christine Kallstrom, M.Ed., Director, Mid-Cities Learning Center, Inc., Box 1191, Arlington, Texas 76010.
Purpose: To identify children whose patterns of functioning suggest the need for immediate referral and therapy in an area of weakness.
Subjects: 347 boys and girls, ages 5 to 6, who have not yet entered grade 1.
Methods: The screening battery was divided into motor, visual, auditory, and language subtests. Each area was related to a portion of the "Wizard of Oz" story, and the subtests were based on games in which the Scarecrow represented motor ability; the Lion, visual perception; the Tin Man, auditory perception; and Dorothy, language ability.
Findings: Preliminary findings indicate that interrelation of modality weaknesses appears to be more significant than a specific weakness in one modality area.
Duration: April 1969-April 1972.
Publications: A brochure is available from the investigator.

SOCIAL SERVICES

30-RA-1 CHANGING PHILOSOPHIES AND PRACTICES IN NORTH CAROLINA ORPHANAGES

Investigator(s): Arthur E. Fink, Ph.D., Professor, School of Social Work, University of North Carolina, Chapel Hill, North Carolina 27514.
Purpose: To study the changes that have taken place in the philosophies and practices in North Carolina orphanages from 1694 to 1950.
Subjects: Orphanages in North Carolina.
Methods: Admission policies, educational work, religious aspects, and social service programs were investigated. Primary and secondary sources of information were examined, including board minutes, journals, special studies, and annual reports of North Carolina orphanages.
Duration: September 1969-September 1971.
Cooperating group(s): Institute for Research in Social Science.
Publications: *North Carolina Historical Review*, October 1971, XLVIII(4), 333-358.

30-RA-2 BROADENED CHILD WELFARE HORIZONS FOR MINORITY CHILDREN

Investigator(s): Michael Schapiro, Executive Director, Foster Family Care Project, 75 Southgate Avenue, Room 17, Daly City, California 94015.
Purpose: To demonstrate the dimensions of need for planning long-term and permanent foster family care among minority children accepted for care by a public agency, to describe the children who need care and evaluate the results of placement, and to describe and evaluate students selected to participate in the program.
Subjects: Approximately 25 to 35 preschool minority children; and approximately 10 undergraduate students in social work who would be trained each year in the project.
Methods: A survey will be conducted of all children currently receiving care in San Mateo County, California. The children from ethnic minority groups will be referred by San Mateo County to the project. The project will determine, based on diagnostic considerations, which children should be placed for long-term care and which children are likely to be returned to their parents or placed for adoption. Children, placed for long-term care by the project staff and foster parents, will be studied using a series of research instruments. The performance of the social work majors, who will carry out the task of placing, supervising, and counseling with children and foster parents, will be assessed systematically. Detailed reporting forms will be completed by student trainees.
Duration: September 1970-August 1973.

30-RA-3 MASSACHUSETTS EARLY EDUCATION PROJECT

Investigator(s): Richard R. Rowe, Ph.D., Director, Program in Clinical Psychology and Public Practice, Harvard University, 11 Farwell Place, Cambridge, Massachusetts 02138.

Purpose: To develop a state plan for the care of young children and for early childhood education in Massachusetts.
Subjects: Massachusetts child care agencies; and, for one phase of the project, 513 parents of children, ages birth to 6.
Methods: The current Massachusetts child care structure was analyzed, including personnel and finances, current status of state requirement that all school districts provide kindergarten, structure and functions of families in Massachusetts, staff development and evaluation, and costs of child care. For one phase of the project, 45-minute interviews were conducted with the parents.
Duration: July 1970-April 1972.
Cooperating group(s): Massachusetts Advisory Council on Education.
Publications: Rowe, Richard R. (Ed.) *Child care in Massachusetts: The public responsibility*. Massachusetts Advisory Council on Education, February 1972.

30-RA-4 COMMUNITY HUMAN RESOURCES DEVELOPMENT IN THE REHABILITATION OF THE HANDICAPPED AND UNDERPRIVILEGED

Investigator(s): Richard Blanton, Ph.D., Professor, Vanderbilt University, Nashville, Tennessee 37203; and Barbara Wallston, Ph.D., Director of Research, Outlook Nashville, Inc., 1700 Hayes Street, Nashville, Tennessee 37203.
Purpose: To describe the available social-recreational programs for people with disabilities, to attempt to assess the effectiveness of the programs to improve social behavior, and to assess the effects of the programs on volunteers' attitudes towards disabilities.
Subjects: About 100 program participants: males and females, ages 9 to 40; and volunteers who are primarily high school age boys and girls.
Methods: Observational data were collected on program participants. Adult club sponsors rated the participants. Volunteers completed paper and pencil measures, including a semantic differential scale of attitudes towards people with disabilities.
Duration: June 1970-August 1972.
Cooperating group(s): Junior Achievement; Social and Rehabilitation Service, U. S. Department of Health, Education, and Welfare.

30-RE-1 BROADENED CHILD WELFARE HORIZONS FOR MINORITY CHILDREN

Investigator(s): Michael Schapiro, M.A., Executive Director, Foster Family Care Project, 75 Southgate Avenue, Room 17, Daly City, California 94051; Bernice Q. Madison, Ph.D., Professor, Department of Social Welfare, San Francisco State College, San Francisco, California 94132; and Paul Weinberger, Ph.D., Professor, Department of Social Welfare, San Diego State College, San Diego, California 92115.
Purpose: To demonstrate the dimensions of need for planned long-term and permanent foster family care for children from ethnic minority groups accepted for care by a public agency, to describe the children who need care and the short-range results of placement, and to describe undergraduate students participating in the program.
Subjects: Approximately 25 to 35 preschool children and approximately 10 students who will participate each year in the project.
Methods: A survey will be conducted of all children who currently receive care in San Mateo County, California. Children from ethnic minority groups will be referred

by San Mateo County to the project. The project staff will determine, based on diagnostic considerations, which children should be placed for long-term care and which children are likely to be returned to their parents or placed for adoption. A series of research instruments will be used to study the children placed for long-term care by the project staff and foster parents. The performance of the college students (who will carry out the task of placement, supervising, and counseling children and foster parents) will be assessed systematically. Detailed reporting forms will be completed by the student trainees.

Duration: September 1970-October 1973.

Cooperating group(s): San Mateo Department of Social Services; San Mateo Probation Department; Rosenberg Foundation; San Francisco Foundation.

30-RE-2 DEVELOPMENTALLY DISABLED CHILDREN IN FOSTER HOME CARE

Investigator(s): Alan R. Gruber, D.S.W., Director of Research, Boston Children's Service Association, 3 Walnut Street, Boston, Massachusetts 02108.

Purpose: To assess the quality, extent, and scope of foster home services for developmentally disabled children in Massachusetts, and to produce adequate information to determine the future use of foster homes as alternatives to institutionalization for the children.

Subjects: All mentally retarded, cerebral palsied, or epileptic children, ages infancy to 17, who are in foster home care in Massachusetts.

Methods: Comparison groups will be established within the study population. Questionnaires designed by social workers to assess the degree of disability of the child will be completed by the foster parent, and interviews will be conducted with the foster parents and natural parents. The project staff will follow a sample of children to assess the degree to which the sponsoring agencies have instituted programs to improve the handicapping conditions.

Duration: March 1972-March 1973.

Cooperating group(s): Massachusetts Bureau of Developmental Disabilities; Massachusetts Governor's Commission on Adoption and Foster Care.

30-RF-1 DAY CARE OF INFANTS AND TODDLERS

Investigator(s): Hiram E. Fitzgerald, Ph.D., Associate Professor, Department of Psychology, Michigan State University, East Lansing, Michigan 48823; and Marguerite Stevenson, M.A., Department of Psychology, George Washington University, Washington, D.C. 20006.

Purpose: To develop day care curricula for infants and toddlers, and to develop staff training programs for day care.

Subjects: 23 children, ages 1 month to 2 1/2: 14 boys and 9 girls, who are children of married students who attend Michigan State University; and 40 undergraduate students, who are trainees in the day care program.

Methods: Fifteen control children who remain at home will be compared to day care infants on nutrition, sleep, developmental schedules, language, illness, and social and cognitive development. Ongoing research will include the use of observational methods to study social, interpersonal, affective, and cognitive skill acquisition.

Duration: 1970-1972.

Cooperating group(s): Institute for Family and Child Study, Michigan State University; Human Learning Research Institute, Michigan State University; Office of Economic Opportunity.
Publications: Stevenson, M. and Fitzgerald, H. E. A survey of day care standards. *Child Care Quarterly*, 1971.

30-RF-2 VOCATIONAL TRAINING PROGRAM IN PRESCHOOL AND DAY CARE

Investigator(s): Russell A. Dusewicz, Ph.D., Director, Project for Research in Infant Development and Education, Bureau of Research, Pennsylvania Department of Education, Box 911, Harrisburg, Pennsylvania 17126.
Purpose: To assess the effectiveness of a program for in-home vocational training in preschool and day care work for unskilled disadvantaged mothers, and to compare it to a similar center-based vocational training program.
Subjects: 10 disadvantaged mothers who participate in the home-based vocational training program, and 15 disadvantaged mothers who participate in a center-based training program.
Methods: Both groups are pre- and posttested on a specially constructed scale to test for knowledge and attitude in child development. At the conclusion of the training program, an analysis of covariance of posttest and pretest scores will be made to compare the relative effectiveness of the two programs.
Duration: October 1970-June 1971.
Cooperating group(s): Pennsylvania Department of Education; Pennsylvania Research Coordinating Unit for Vocational Education.
Publications: Copies of the report are available from the investigator.

30-RF-3 CHILD CARE: A STUDY OF A HUMAN SERVICE DELIVERY SYSTEM

Investigator(s): Patricia Gerald, M.C.P., Social Policies Planning Program, Department of City and Regional Planning, University of California at Berkeley, Berkeley, California 94720.
Purpose: To understand the organizational constraints on the expansion and upgrading of child care services with special relevance to problems of setting, enforcing standards, and channeling funds.
Subjects: Providers of day care, potential providers of day care, and the bureaucracies that administer public programs and public regulations.
Methods: Structured field methods will be used to interview day care personnel. Observations will be made in the bureaucratic setting and in the day care programs.
Duration: September 1971-September 1972.
Publications: Day care nightmare! Working Paper No. 145. Berkeley: University of California, Institute of Urban and Regional Development.

30-RF-4 THE EFFECT OF DAY CARE ON YOUNG CHILDREN

Investigator(s): Jerome Kagan, Ph.D., Professor, Department of Developmental Psychology, Harvard University, Cambridge, Massachusetts 02138; and Richard Kearsley, M.D., Massachusetts Health Research Institute, Boston, Massachusetts.

Purpose: To study the effect of day care on young children.
Subjects: 120 boys and girls, ages 3 1 2 to 30 months, from working class families.
Methods: The growth and development of children in a day care setting are being compared to two matched control groups. One control group lives at home; the other group attends a custodial day care program.
Duration: 1969-1974.

30-RF-5 INFANT DAY CARE RESEARCH

Investigator(s): Todd R. Risley, Ph.D., Associate Professor, Department of Human Development, Kansas University, Lawrence, Kansas 66044.
Purpose: To develop a behavioral measure to indicate the level of care infants are receiving and the behavior of infants in a child care environment.
Subjects: 20 infants, ages 1 to 12 months.
Methods: Reliable observation procedures and their description will be developed so that naive observers can obtain a reliability of 85 percent or higher from the written description.
Findings: A reliability of 90 percent has been attained, and some behavior norms have been established for children in a child care environment.
Duration: December 1971-November 1972.
Cooperating group(s): Office of Education, U.S. Department of Health, Education, and Welfare; Kansas Center for Research on Early Childhood Education, National Program for Research on Early Childhood Education.

30-RH-1 TRAIT STUDY OF FAMILIES IN CHILDREN'S PROTECTIVE AGENCY CASELOAD

Investigator(s): Morton I. Cohen, B.A., Director of Research, Children's Protective Services, Massachusetts Society for the Prevention of Cruelty to Children, 43 Mt. Vernon Street, Boston, Massachusetts 02108.
Purpose: To identify the pervasiveness of 31 psychosocial characteristics, pathologies, and problems that exist in the families of abused and neglected children.
Subjects: 1,174 families of abused and neglected children who are receiving ongoing social casework services by child protective agencies in Massachusetts.
Methods: The casework staff of the protective agencies completed forms to identify the existence or absence of each of the 31 psychosocial traits. Caseworkers established which member or members of each family exhibited the psychosocial characteristics.
Duration: March 1971-completed.
Publications: Copies of the study are available from the investigator.

30-RH-2 EXTENSION SERVICE PROJECT

Investigator(s): Morton I. Cohen, B.A., Director of Research, Children's Protective Services, Massachusetts Society for the Prevention of Cruelty to Children, 43 Mt. Vernon Street, Boston, Massachusetts 02108.
Purpose: To provide a children's protective service in an urban neighborhood, in which the physical facility and the service staff were located within the neighborhood.

Subjects: Families of abused and neglected children within a particular neighborhood.
Methods: The social staff consisted of a combination of indigenous workers and workers holding the degree of Masters of Social Work. The neighborhood had previously been serviced from a central office which was not located in the neighborhood. Data were gathered from staff report forms which were analyzed to compare results before and after service was decentralized.
Findings: The decentralization of this service and the use of indigenous workers were shown to be of limited value. The factors that influenced the outcomes were identified.
Duration: October 1968-completed.
Publications: Copies of the report are available from the investigator.

30-RH-3 A PROTECTIVE SERVICES CENTER TO PROVIDE A RANGE OF SERVICES FOR FAMILIES IN WHICH CHILDREN ARE NEGLECTED OR ABUSED

Investigator(s): Mary Sullivan, M.S.W., Professor, Jane Addams School of Social Work, Chicago Circle Campus, University of Illinois, Chicago, Illinois 60612; Marion J. Spasser, M.S.W., Director; Barbara Cherry, M.S.W., Training Director, Bowen Center, Chicago, Illinois.
Purpose: To demonstrate the effectiveness of an integrated approach to provide varied needed services to families in which children are neglected or abused.
Subjects: Families who were referred because of their neglect or abuse of children.
Methods: The services needed by the families included casework, group work, day care, educational therapy, homemaker service, tutoring, temporary foster care, emergency sheltering, and pediatric care. The research evaluation was based on the quantity of service delivered to each member of client families and to total families as it related to success in reaching highly restrictive multiproblem families.
Duration: July 1965-July 1971.
Cooperating group(s): U. S. Department of Health, Education, and Welfare; Illinois Department of Children and Family Services.

HEALTH SERVICES

30-SA-1 HEALTH BEHAVIOR OF PRESCHOOL CHILDREN

Investigator(s): Darwin Dennison, Ed.D., Assistant Professor, Department of Health Science, Ball State University, Muncie, Indiana 47306.
Purpose: To identify the health practices of preschool children.
Subjects: 28 boys and 19 girls, ages 3 years 2 months, to 5 years 4 months; 27 from lower social classes and 20 from middle social classes, from two community operated child care centers in Muncie, Indiana.
Methods: A questionnaire was administered to the parents which contained 52 dichotomous and Likert-type items regarding health behaviors that were easily observed at home. Parents were asked questions scaled with high scores indicating positive health behavior. The validity of the instrument was examined by observing selected children and their behaviors, and comparing the observed behaviors with parental responses on the questionnaire. The items were organized around the health areas of nutrition, dental health, safety and first aid, mental-social health, and disease-disorder prevention.
Findings: Social class was found to be significantly related to seven behaviors and the composites of dental health and safety and first aid.
Duration: September 1971-May 1972.

30-SA-2 THE DETECTION OF CATARRHAL OBITIS MEDIA IN KINDERGARTEN PUPILS BY AUDIOMETER AND PNEUMATIC OTOSCOPY AND BRIDGE

Investigator(s): George Kahn, M.D., M.P.H., Director of Child Health and School Physician; and Gloria A. Rudisch, M.D., M.P.H., Associate School Physician, Brookline Health Department, 11 Pierce Street, Brookline, Massachusetts 02146.
partment, 11 Pierce Street, Brookline, Massachusetts 02146.
Purpose: To detect hearing losses in kindergarten pupils using the audiometer, pneumatic otoscopy, and tympanometry with bridge.
Subjects: 362 kindergarten children, ages 4 1/2 to 6, in Brookline, Massachusetts.
Methods: Hearing screening will be conducted by a special children's audiologist using an audiometer in a sound-proof van. Two pediatricians will simultaneously examine the children's ears with pneumatic otoscopy. Each child will also be screened by tympanometry with bridge.
Findings: Approximately 10 percent of the children failed and will need continued follow-up treatment.
Duration: November 1971-February 1972.
Cooperating group(s): Boston Guild for the Hard of Hearing; Brookline School Department; Brookline Health Department; Department of Special Education, Boston University; Children's Hospital Medical Center.

30-SA-3 PILOT HEALTH AND WORK PROGRAM FOR ADOLESCENTS

Investigator(s): Mildred A. Lacey, M.S.W., Chief Social Worker and Director; and Lois T. Humphrey, B.A., Counselor, Pilot Health and Work Program, Children and Youth

Project, 848 Adams Avenue, Memphis, Tennessee 38103; W. Theodore May, Ph.D., Associate Professor, Department of Psychiatry; and David H. James, Jr., M.D., Associate Professor, Department of Pediatrics, College of Medicine, University of Tennessee, Memphis, Tennessee 38103.

Purpose: To gather information about the health needs of adolescents, to determine how they perceive health needs and the factors that motivate them to seek health care, and to study the effect on the health of the group members of the pilot services promoting health care combined with work activities.

Subjects: Ten boys and 10 girls, ages 14 to 18, in grades 9 to 12. Three children are white; 17 are black. Seven of the children live at home with both parents, and 13 are in one-parent families; six of the children are supported by their parents, two by social security, and 12 by AFDC.

Methods: Questionnaires and group tests will be administered at the beginning and end of the program. Questionnaires given to the adolescent group members will be compared with 200 questionnaires given to other youths in the area. Information from the adolescents will be correlated with clinic charts and school records.

Duration: September 1972-August 1973.

30-SB-1 ASSESSING AND MANAGING ACUTE ILLNESS IN ELEMENTARY SCHOOL PUPILS

Investigator(s): Norman A. Hilmar, Ph.D., Professor; and Patricia McAtee, M.S., Research Associate, Department of Sociology, University of Colorado, Boulder, Colorado 80302.

Purpose: To evaluate the performance of regular school nurses and school nurse practitioners in handling health and health related problems of pupils, and to investigate the reasons for parents' cooperation or noncooperation in carrying out the nurse's advice.

Subjects: Pupils who have health complaints during a 1-week period in Denver public elementary schools that are served by eight regular school nurses and by eight school nurse practitioners.

Methods: The results of approximately 3,200 pupil-health encounters with nurses will be included in the study with 300 family follow-ups and 100 physician follow-ups. Pupil complaints and the assessment and disposition of the case by the school nurse will be tabulated. For the pupils sent home, parents will be queried about their comprehension of the nurse's instructions and any problems they had in carrying them out. For the children who are subsequently seen by a physician, the physician will be queried about the accuracy of the nurses' impressions about the pupils' health problems and the adequacy of the information provided him by the nurses. Analysis of the data will include (1) an evaluation of the overall performance of the school nurse practitioners compared to the regular school nurses, (2) the identification of barriers to parental cooperation, (3) the description of particular kinds of frequent health complaints for which school nurse management could be expanded or improved, and (4) the adoption of any policy revisions or additional training needed to effect expansion or improvement.

Duration: February 1972-May 1972.

Cooperating group(s): Denver Public Schools; Schools of Nursing and Medicine, University of Colorado; Bruner Foundation; National Center for Health Services Research and Development, Health Services and Mental Health Administration, Public Health Service, U.S. Department of Health, Education, and Welfare.

30-SD-1 INFANT NUTRITION CLINIC

Investigator(s): J. A. Birkbeck, M.B., Assistant Professor, Department of Pediatrics and Human Nutrition, University of British Columbia, Vancouver 8, British Columbia, Canada.
Purpose: To investigate methods of providing nutritional advice to expectant parents and mothers of small infants, and to examine the consequences with regard to growth and development of the child.
Subjects: Children and prospective parents.
Methods: Prenatal discussion groups are held at monthly intervals to discuss current concepts in maternal-fetal nutrition and to determine how the concepts may be implemented. The child will be reviewed at a clinic at regular intervals to examine his diet and to study his growth and development. Growth will be measured by length (Harpenden Measuring Table) and weight. Skinfold and muscle bulk studies will be conducted.
Duration: August 1971-continuing.

30-SD-2 DELIVERY AND HEALTH CARE: A CASE STUDY OF INFANT MORTALITY

Investigator(s): Helen C. Chase, D.P.H., Staff Associate, Department of Biostatistics, Institute of Medicine, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D.C. 20418.
Purpose: To examine the events surrounding the delivery of health services using pregnancy and infant mortality as the central focus of the study.
Subjects: A cohort of infants born in New York City in 1968, including 3,000 linked infant death records and 142,000 live birth records. Supplementary information is derived from 18,000 fetal death records for the same period.
Methods: Data analysis is based on sociodemographic, medical-obstetric, and selected medical care characteristics. The education of the parents and prenatal care of their children will also be examined. The results are measured in terms of infant mortality, low birthweight, and Apgar scores as they relate to the other characteristics.
Duration: August 1970-August 1972.
Cooperating group(s): Carnegie Corporation, New York; Association for the Aid of Crippled Children.

30-SD-3 CHILDHOOD MORTALITY

Investigator(s): Louis Munan, M.S., Associate Professor and Chairman, Department of Epidemiology, Faculty of Medicine, Centre Hospitalier Universitaire, Sherbrooke, Quebec, Canada.
Purpose: To determine the principal and associate causes of death of children who died in eastern townships of Canada from 1970 through 1972.
Subjects: Preschool children who at the time of death lived in the region studied, ages birth to 4 years.
Methods: Data were collected through family interviews and from laboratory, hospital, and other clinical sources. The data were reviewed by a clinical committee, and a sample was drawn of families with children of the same age group residing in the same geographic area.
Duration: November 1969-December 1972.

Cooperating group(s): Pan American Health Organization; World Health Organization; Department of National Health and Welfare, Ottawa, Canada.

30-SE-1 HAWAII PREGNANCY, BIRTH CONTROL, AND ABORTION STUDY

Investigator(s): Milton Diamond, Ph.D., Professor, School of Medicine; Roy G. Smith, M.D., M.P.H., Associate Professor, School of Public Health; Patricia G. Steinhoff, Ph.D., Assistant Professor, Department of Sociology; and James A. Palmore, Ph.D., Assistant Director, East-West Population Institute, University of Hawaii, Honolulu, Hawaii 96822.

Purpose: To assess the social, demographic, and medical effects of legalizing abortion and the process of decision making with respect to sexual and contraceptive practices and planning for pregnancy and pregnancy outcome.

Subjects: All induced abortion patients in hospitals in Hawaii.

Methods: The study evaluates the three stages of decision making related to pregnancy: (1) having sexual relations, (2) the use of contraceptives, and (3) the method of terminating a pregnancy. A voluntary self-administered questionnaire was offered to every abortion patient in major hospitals in Hawaii. Demographic and medical data from the patient's hospital chart will be collected on every abortion patient in the state. Similar data will be collected on maternity patients during specified study periods. From these data, conception cohorts are constructed that permit comparison of women who conceive at the same time but whose decision regarding the termination of pregnancy differs.

Findings: In its first year, Hawaii's new abortion law was used by 3,643 women from all religions, ethnic groups, and geographic areas in the state. Abortions were performed early in gestation, with a low rate of complications.

Duration: July 1970-July 1973.

Cooperating group(s): National Institute of Child Health and Human Development, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

Publications: Abortion in Hawaii: The first 124 days. *American Journal of Public Health,* March 1971, 61(3), 530-542.

30-SF-1 HEALTH DELIVERY: COMPREHENSIVE VS. EPISODIC USERS

Investigator(s): Kevin Lucey, M.S., School Psychologist; Melvin Floumanhaft, M.A., Chief Psychologist; Julius Klein, M.A., Project Adminstrator; Andre Chabot, M.D., M.P.H., Project Director, Project PRYME 67-10 Rockaway Beach Boulevard, Arverne, New York 11692.

Purpose: To determine possible personality variables that distinguish comprehensive users from episodic users of health care.

Subjects: 217 mothers of various socioeconomic statuses, ages, and races, who registered their children under age 2 at a health clinic over a 6-month period.

Methods: The group which is not defined as comprehensive and episodic users will act as a control. Data will be collected through personal interviews, and different statistical analyses will be used. A consumer satisfaction scale, an ego strength scale, and an alienation scale will be used. Data will also be analyzed in terms of socioeconomic status, as well as other descriptive variables.

Duration: July 1971-June 1972.

Cooperating group(s): Division of Research, Maternal and Child Health Service, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare.

30-SF-2 ANALYSIS OF CONTRASTING FORMS OF HEALTH CARE DELIVERY

Investigator(s): David M. Kessner, M.D., Study Director, Health Services Research Study; Rashid L. Bashshur, Ph.D., Staff Associate, Medical Care Organization and Evaluation; and Carolyn E. Kalk, M.A., Research Coordinator and Program Administrator, Institute of Medicine, National Academy of Sciences, 2101 Constitution Avenue, N.W., Washington, D. C. 20418.

Purpose: To develop a method to evaluate ambulatory health services.

Subjects: 1,700 families of disparate income levels whose 2,700 children, ages 6 months to 11 years, obtain their primary medical care from prepaid group practice, public city clinics, or hospital and outpatient departments of the Office of Economic Opportunity neighborhood health centers.

Methods: A health care questionnaire was administered to the female head of the family. A clinical evaluation of the child will be made for three indicator diseases ("tracer"): middle ear infection and associated hearing loss, visual disorders, and anemia. An analysis will be made of the different providers who deliver health care to the children.

Duration: August 1970-August 1972.

Cooperating group(s): Carnegie Corporation, New York; Association for the Aid of Crippled Children; Fannie E. Rippel Foundation; Office of Deputy Assistant Secretary for Evaluation and Monitoring, U. S. Department of Health, Education, and Welfare; Office of Research, Planning, and Evaluation, Office of Economic Opportunity.

Publications: *Development of methodology for the evaluation of neighborhood health centers.* Washington, D.C.: National Academy of Sciences, Printing and Publishing Office, 1972.

30-SG-1 A MENTAL HEALTH PROGRAM FOR PRESCHOOL CHILDREN

Investigator(s): Myrna B. Shure, Ph.D., Assistant Professor; and George Spivack, Ph.D., Professor and Research Director, Department of Research and Evaluation, Hahnemann Medical College, 314 North Broad Street, Philadelphia, Pennsylvania 19102.

Purpose: To conduct a controlled research demonstration project to enhance cognitive real life problem solving skills and manifest behavioral adjustment of young disadvantaged children.

Subjects: Approximately 250 Head Start children, ages 4 and 5, evenly divided by sex.

Methods: The children will be divided into training and control groups. The training group will be exposed to a sequenced series of prerequisite and/or partial skills judged necessary to attain final interpersonal problem solving skills to be learned (e.g., language, emotional awareness, multiple attributes, fairness, and consequential thinking). Statistical test of pre- and postmeasures will reveal information on the effect of the curriculum on the development of problem solving skills and adjustment.

Findings: Previous work by the investigators on a smaller sample has suggested that regardless of IQ, trained children improved in problem solving ability significantly more than nontrained children. Altering such cognitive processes was directly related to improved overt behavioral adjustment.

Duration: September 1971-June 1973.

Cooperating group(s): Applied Research Branch, National Institute of Mental Health, Health Services and Mental Health Administration, Public Health Service, U. S. Department of Health, Education, and Welfare; Philadelphia School District; Philadelphia Board of Education.

Publications: Shure, M. B.; Spivack, G.; and Jaeger, M.A. Problem-solving thinking and adjustment among disadvantaged preschool children. *Child Development,* 1971, 42, 1791-1803; Shure, M. B.; Spivack, G.; and Gordon, R. Problem-solving thinking: A preventive mental health program for preschool children. *Reading World,* 1972, 11, 259-273.

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OTHER ABSTRACTING JOURNALS AND SERVICES

Abstracts of Hospital Management Studies (quarterly), the Cooperative Information Center of Hospital Management Studies, University of Michigan, 220 East Huron Street, 419 City Center Building, Ann Arbor, Michigan 48108.

Abstracts on Criminology and Penology, Criminologica Foundation, Rapenburg 38, Leiden, The Netherlands.

Communication Disorders, Information Center for Hearing, Speech, and Disorders of Human Communication, The Johns Hopkins Medical Institutes, 310 Harriet Lane Home, Baltimore, Maryland 21205.

Current Index to Journals in Education (monthly), CCM Information Corporation, 909 Third Avenue, New York, New York 10020.

Dissertation Abstracts, University Microfilms, Ann Arbor, Michigan 48103. (Gives synopses of U.S. doctoral dissertations with an annual index.)

dsh Abstracts, Deafness, Speech and Hearing Publications, Gallaudet College, Washington, D.C. 20002.

Exceptional Child Education Abstracts (quarterly), The Council for Exceptional Children, Box 6034, Mid City Station, Washington, D.C. 20005.

Health Economic Studies Information Exchange, Division of Medical Care Administration, Public Health Service, Washington, D.C. 20402.

Index Medicus, National Institutes of Health. Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Language and Language Behavior Abstracts (quarterly), Center for Research on Language and Language Behavior, University of Michigan, Ann Arbor, Michigan 48104. Order from Subscription Manager, LLBA, Meredith Publishing Co., 440 Park Avenue South, New York, New York 10016.

Mental Retardation Abstracts, Division of Mental Retardation, Social and Rehabilitation Service, 330 Independence Avenue, S.W., Washington, D.C. 20201. Concerning abstracts write to Lemar J. Clevenger, Project Administrator, MRA, American Association of Mental Deficiency, 1601 West Broad Street, Columbus, Ohio 43223 or Miss Patricia Thuben, Project Officer, Division of Mental Retardation, Rehabilitation Services Administration, Social and Rehabilitation Service, Washington, D.C. 20201.

Nutrition Abstracts and Reviews, Commonwealth Bureau of Animal Nutrition, Bucksburn, Aberdeen AB2 9SB, Scotland.

Poverty and Human Resources Abstracts (bimonthly), Institute of Labor and Industrial Relations, University of Michigan-Wayne State University, P.O. Box 1567, Ann Arbor, Michigan 48106.

Psychological Abstracts, American Psychological Association, 1333-16th Street, N.W., Washington, D.C. 20036.

Rehabilitation Literature, National Easter Seal Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago, Illinois 60612.

Research in Education (monthly), Leasco Systems and Research Corporation, 4833 Rugby Avenue, Bethesda, Maryland 20014.
Sociological Abstracts, 15 East 31st Street, New York, New York 10016.

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The Excerpta Medica Foundation, New York Academy of Medicine Building, 2 East 103rd Street, New York, New York 10029, and 119-123 Herengracht, Amsterdam C, The Netherlands has established an abstracting service on pediatrics, available on a yearly subscription basis. In addition to abstracts, the Foundation provides to subscribers, at cost, photocopies and translations of complete articles.

The Minnesota Family Study Center supplies to interested scholars bibliographic information from the Inventory of Published Research in Marriage and Family Behavior. Address requests to: Director, Inventory of Published Research in Marriage and Family Behavior, Social Science Tower 1026, University of Minnesota, Minneapolis, Minnesota 55455.

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The Science Information Exchange, Smithsonian Institution, 209 Madison National Bank Building, 1730 M Street, N.W., Washington, D.C. 20036 provides to qualified investigators, for a fee, selected abstracts of current research supported by foundation or government grants. The exchange covers such fields as medicine, nursing, public health, nutrition, psychology, education, anthropology, mental health, and intercultural relations.

The Library of the National Bureau for Child Welfare (Voor Kinderbescherming), Stadhouderslaan 150, The Hague, The Netherlands publishes abstracts of articles in the field of child welfare each month. These are in Dutch, but those familiar with the Universal Decimal System would be able to understand something about the articles. The subscription rate for documentation on cards is 30 guilders (approximately $8.40).

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METHODS: (Please discuss research design: control groups, methods of data collection, research instruments, unique features of research, statistical treatment.)

FINDINGS TO DATE:

DATE PROJECT INITIATED:		ESTIMATED TERMINAL DATE:
PRINCIPAL INVESTIGATOR(S):	DEGREE:	POSITION AND ORGANIZATION:

COOPERATING GROUPS: (In the research itself or in the research funding.)

PUBLICATION REFERENCES: (If no publication is planned, please indicate under what conditions data and results will be available.)

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Please report studies in progress or completed within the last year that:

center on children or their families in such areas as child growth and development, intelligence, personality, education, social adjustment, family life, physical and emotional disorders

concern service programs in the fields of child health, child welfare, or special education

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